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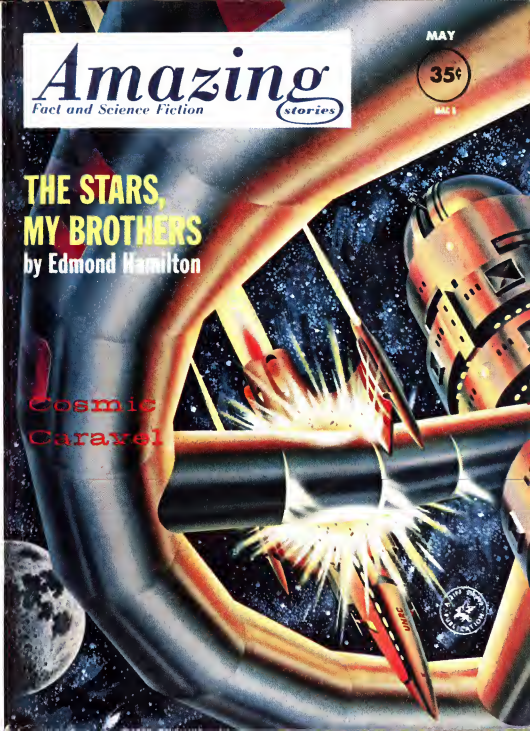
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stories

## THE STARS, MY BROTHERS

by Edmond Hamilton

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Fact and Science Fiction Stories

MAY, 1962

Vol. 36, No. 5

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## EDITORIAL

**A**NOTHER hint of the bleak possibilities of future science was revealed recently when the American Medical Association discussed ways in which radio-controlled pellets of medication, implanted in the human body, can be used as a means of controlling behavior.

Already science can stimulate or depress specific types of behavior by electrical signals shot into the nervous system from a control station. A similar station could trigger the release of chemical or hormonal pellets stuck in the body or its organs like cloves in a ham, and thus regulate moods or control personality behavior.

Said biophysicist Dr. Otto Schmitt: "We can modify behavior. Now we must study how we can use this ability for the good . . ."

A worthy aim. But the pathway is strewn with the boobytraps of the motives of those who control the devices. It is not

encouraging to learn that most of the work being done on this "technological control of behavior" is being performed by the military, and that most of what it is doing is top-secret.

The age of robots may be upon us before we know it. Only trouble is, the robots may be us.

\* \* \*

**I**F I may be permitted a personal plug—and who is to stop me—it might interest some of you to know that NL has written a book which should recently have arrived in your local bookstore. It is called *Is Anybody Happy? A Study of the American Search for Pleasure*, and it has nothing to do with science-fiction. The theme is that Americans, having been told they have lots of leisure, are racing around allegedly having lots of fun—but that darned few of us are having any pleasure. If any of you actually lose control and buy a copy, let me know what you think of it.

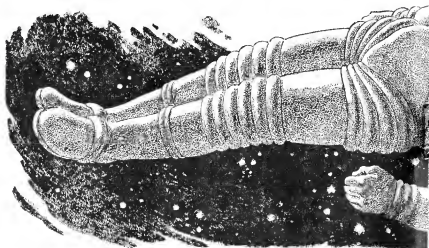
—NL

# THE STARS, MY BROTHERS

By  
EDMOND  
HAMILTON

*He was afraid—not of the present or the future,  
but of the past. He was afraid of the thing  
tagged Reed Kieran, that stiff blind voiceless  
thing wheeling its slow orbit around the Moon,  
companion to dead worlds and silent space.*

1.                      it was in an electric relay or in  
the brain of the pilot.  
SOMETHING tiny went wrong,      The pilot was Lieutenant  
but no one ever knew whether      Charles Wandek, UNRC, home



Illustrated by FINLAY



address 1677 Anstey Avenue, Detroit. He did not survive the crash of his ferry into Wheel Five. Neither did his three passengers, a young French astrophysicist, an East Indian expert on magnetic fields, and a forty-year old man from Philadelphia who was coming out to replace a pump technician.

Someone else who did not survive was Reed Kieran, the only man in Wheel Five itself to lose his life. Kieran, who was thirty-six years old, was an accredited scientist-employee of UNRC. Home address: 815 Elm Street, Midland Springs, Ohio.

Kieran, despite the fact that he was a confirmed bachelor, was in Wheel Five because of a woman. But the woman who had sent him there was no beautiful lost love. Her name was Gertrude Lemmiken, she was nineteen years old and overweight, with a fat, stupid face. She suffered from headcolds and sniffed constantly in the Ohio college classroom where Kieran taught Physics Two.

One March morning, Kieran could bear it no longer. He told himself, "If she sniffs this morning, I'm through. I'll resign and join the UNRC."

Gertrude sniffed. Six months later, having finished his training for the United Nations Reconnaissance Corps, Kieran shipped out for a term of duty in UNRC Space Laboratory Num-

ber 5, known more familiarly as Wheel Five.

Wheel Five circled the Moon. There was an elaborate base on the surface of the Moon in this year 1981. There were laboratories and observatories there, too. But it had been found that the alternating fortnights of boiling heat and near-absolute-zero cold on the lunar surface could play havoc with the delicate instruments used in certain researches. Hence Wheel Five had been built and was staffed by research men who were rotated at regular eight-month intervals.

KIERAN loved it, from the first. He thought that that was because of the sheer beauty of it, the gaunt, silver death-head of the Moon forever turning beneath, the still and solemn glory of the undimmed stars, the filamentaries stretched across the distant star-clusters like shining veils, the quietness, the peace.

But Kieran had a certain intellectual honesty, and after a while he admitted to himself that neither the beauty nor the romance of it was what made this life so attractive to him. It was the fact that he was far away from Earth. He did not even have to look at Earth, for nearly all geophysical research was taken care of by Wheels Two and Three that circled the mother planet. He was almost completely di-



forced from all Earth's problems and people.

Kieran liked people, but had never felt that he understood them. What seemed important to them, all the drives of ordinary day-to-day existence, had never seemed very important to him. He had felt that there must be something wrong with him, something lacking, for it seemed to him that people everywhere committed the most outlandish follies, believed in the most incredible things, were swayed by pure herd-instinct into the most harmful courses of behavior. They could not all be wrong, he thought, so he must be wrong—and it had worried him. He had taken partial refuge in pure science, but the study and then the teaching of astrophysics had not been the refuge that Wheel Five was. He would be sorry to leave the Wheel when his time was up.

And he was sorry, when the day came. The others of the staff were already out in the docking lock in the rim, waiting to greet the replacements from the ferry. Kieran, hating to leave, lagged behind. Then, realizing it would be churlish not to meet this young Frenchman who was replacing him, he hurried along the corridor in the big spoke when he saw the ferry coming in.

He was two-thirds of the way along the spoke to the rim when it happened. There was a tremen-

dous crash that flung him violently from his feet. He felt a coldness, instant and terrible.

He was dying.

He was dead.

The ferry had been coming in on a perfectly normal approach when the tiny something went wrong, in the ship or in the judgment of the pilot. Its drive-rockets suddenly blasted on full, it heeled over sharply, it smashed through the big starboard spoke like a knife through butter.

Wheel Five staggered, rocked, and floundered. The automatic safety bulkheads had all closed, and the big spoke—Section T2—was the only section to blow its air, and Kieran was the only man caught in it. The alarms went off, and while the wreckage of the ferry, with three dead men in it, was still drifting close by, everyone in the Wheel was in his pressure-suit and emergency measures were in full force.

WITHIN thirty minutes it became evident that the Wheel was going to survive this accident. It was edging slowly out of orbit from the impetus of the blow, and in the present weakened state of the construction its small corrective rockets could not be used to stop the drift. But Meloni, the UNRC captain commanding, had got first reports from his damage-control teams, and it did not look too bad. He

fired off peremptory demands for the repair materials he would need, and was assured by UNRC headquarters at Mexico City that the ferries would be loaded and on their way as soon as possible.

Meloni was just beginning to relax a little when a young officer brought up a minor but vexing problem. Lieutenant Vinson had headed the small party sent out to recover the bodies of the four dead men. In their pressure-suits they had been pawing through the tangled wreckage for some time, and young Vinson was tired when he made his report.

"We have all four alongside, sir. The three men in the ferry were pretty badly mangled in the crash. Kieran wasn't physically wounded, but died from space-asphyxiation."

The captain stared at him. "Alongside? Why didn't you bring them in? They'll go back in one of the ferries to Earth for burial."

"But—" Vinson started to protest.

Meloni interrupted sharply. "You need to learn a few things about morale, Lieutenant. You think it's going to do morale here any good to have four dead men floating alongside where everyone can see them? Fetch them in and store them in one of the holds."

Vinson, sweating and unhappy

now, had visions of a black mark on his record, and determined to make his point.

"But about Kieran, sir—he was only frozen. Suppose there was a chance to bring him back?"

"Bring him back? What the devil are you talking about?"

Vinson said, "I read they're trying to find some way of restoring a man that gets space-frozen. Some scientists down at Delhi University. If they succeeded, and if we had Kieran still intact in space—"

"Oh, hell, that's just a scientific pipe-dream, they'll never find a way to do that," Meloni said. "It's all just theory."

"Yes, sir," said Vinson, hanging his head.

"We've got trouble enough here without you bringing up ideas like this," the captain continued angrily. "Get out of here."

Vinson was now completely crushed. "Yes, sir. I'll bring the bodies in."

HE went out. Meloni stared at the door, and began to think. A commanding officer had to be careful, or he could get skinned alive. If, by some remote chance, this Delhi idea ever succeeded, he, Meloni, would be in for it for having Kieran buried. He strode to the door and flung it open, mentally cursing the young snotty who had had to bring this up.

"Vinson!" he shouted.

The lieutenant turned back, startled. "Yes, sir?"

"Hold Kieran's body outside. I'll check on this with Mexico City.

"Yes, sir."

Still angry, Meloni shot a message to Personnel at Mexico City. That done, he forgot about it. The buck had been passed, let the boys sitting on their backsides down on Earth handle it.

Colonel Hausman, second in command of Personnel Division of UNRC, was the man to whom Meloni's message went. He snorted loudly when he read it. And later, when he went in to report to Garces, the brigadier commanding the Division, he took the message with him.

"Meloni must be pretty badly rattled by the crash," he said. "Look at this."

Garces read the message, then looked up. "Anything to this? The Delhi experiments, I mean?"

Hausman had taken care to brief himself on that point and was able to answer emphatically.

"Damned little. Those chaps in Delhi have been playing around freezing insects and thawing them out, and they think the process might be developed someday to where it could revive frozen spacemen. It's an iffy idea. I'll burn Meloni's backside off for bringing it up at a time like this."

Garces, after a moment, shook

his head. "No, wait. Let me think about this."

He looked speculatively out of the window for a few moments. Then he said,

"Message Meloni that this one chap's body—what's his name, Kieran?—is to be preserved in space against a chance of future revival."

Hausman nearly blotted his copybook by exclaiming, "For God's sake—" He choked that down in time and said, "But it could be centuries before a revival process is perfected, if it ever is."

Garces nodded. "I know. But you're missing a psychological point that could be valuable to UNRC. This Kieran has relatives, doesn't he?"

Hausman nodded. "A widowed mother and a sister. His father's been dead a long time. No wife or children."

Garces said, "If we tell them he's dead, frozen in space and then buried, it's all over with. Won't those people feel a lot better if we tell them that he's *apparently* dead, but might be brought back when a revival-technique is perfected in the future?"

"I suppose they'd feel better about it," Hausman conceded. "But I don't see—"

Garces shrugged. "Simple. We're only really beginning in space, you know. As we go on,

UNRC is going to lose a number of men, spacestruck just like Kieran. A howl will go up about our casualty lists, it always does. But if we can say that they're only frozen until such time as revival technique is achieved, everyone will feel better about it."

"I suppose public relations are important—" Hausman began to say, and Garces nodded quickly.

"They are. See that this is done, when you go up to confer with Meloni. Make sure that it gets onto the video networks, I want everyone to see it."

Later, with many cameras and millions of people watching, Kieran's body, in a pressure-suit, was ceremoniously taken to a selected position where it would orbit the Moon. All suggestions of the funerary were carefully avoided. The spacestruck man—nobody at all referred to him as "dead"—would remain in this position until a revival process was perfected.

"Until forever," thought Hausman, watching sourly. "I suppose Garces is right. But they'll have a whole graveyard here, as time goes on."

As time went on, they did.

## 2.

**I**N HIS dreams, a soft voice whispered.

He did not know what it was telling him, except that it was

important. He was hardly aware of its coming, the times it came. There would be the quiet murmuring, and something in him seemed to hear and understand, and then the murmur faded away and there was nothing but the dreams again.

But were they dreams? Nothing had form or meaning. Light, darkness, sound, pain and not-pain, flowed over him. Flowed over—who? Who was he? He did not even know that. He did not care.

But he came to care, the question vaguely nagged him. He should try to remember. There was more than dreams and the whispering voice. There was—what? If he had one real thing to cling to, to put his feet on and climb back from—One thing like his name.

He had no name. He was no one. Sleep and forget it. Sleep and dream and listen—

"Kieran".

It went across his brain like a shattering bolt of lightning, that word. He did not know what the word was or what it meant but it found an echo somewhere and his brain screamed it.

"Kieran!"

Not his brain alone, his voice was gasping it, harshly and croakingly, his lungs seeming on fire as they expelled the word.

He was shaking. He had a body that could shake, that could

feel pain, that was feeling pain now. He tried to move, to break the nightmare, to get back again to the vague dreams, and the soothing whisper.

He moved. His limbs thrashed leadenly, his chest heaved and panted, his eyes opened.

He lay in a narrow bunk in a very small metal room.

He looked slowly around. He did not know this place. The gleaming white metal of walls and ceiling was unfamiliar. There was a slight, persistent tingling vibration in everything that was unfamiliar, too.

He was not in Wheel Five. He had seen every cell in it and none of them were like this. Also, there lacked the persistent susurrant sound of the ventilation pumps. Where—

*You're in a ship, Kieran. A star-ship.*

SOMETHING back in his mind told him that. But of course it was ridiculous, a quirk of the imagination. There weren't any star-ships.

*You're all right, Kieran. You're in a star-ship, and you're all right.*

The emphatic assurance came from somewhere back in his brain and it was comforting. He didn't feel very good, he felt dopey and sore, but there was no use worrying about it when he knew for sure he was all right—

The hell he was all right! He was in someplace new, someplace strange, and he felt half sick and he was not all right at all. Instead of lying here on his back listening to comforting lies from his imagination, he should get up, find out what was going on, what had happened.

Of a sudden, memory began to clear. What *had* happened? Something, a crash, a terrible coldness—

Kieran began to shiver. He had been in Section T-2, on his way to the lock, and suddenly the floor had risen under him and Wheel Five had seemed to crash into pieces around him. The cold, the pain—

*You're in a star-ship. You're all right.*

For God's sake why did his mind keep telling him things like that, things he believed? For if he did not believe them he would be in a panic, not knowing where he was, how he had come here. There was panic in his mind but there was a barrier against it, the barrier of the soothing reassurances that came from he knew not where.

He tried to sit up. It was useless, he was too weak. He lay, breathing heavily. He felt that he should be hysterical with fear but somehow he was not, that barrier in his mind prevented it.

He had decided to try shouting when a door in the side of the lit-

the room slid open and a man came in.

He came over and looked down at Kieran. He was a young man, sandy-haired, with a compact, chunky figure and a flat, hard face. His eyes were blue and intense, and they gave Kieran the feeling that this man was a wound-up spring. He looked down and said,

"How do you feel, Kieran?"

Kieran looked up at him. He asked, "Am I in a star-ship?"

"Yes."

"But there aren't any star-ships."

"There are. You're in one."

The sandy-haired man added, "My name is Vaillant."

*It's true, what he says,* murmured the something in Kieran's mind.

"Where—how—" Kieran began.

Vaillant interrupted his stammering question. "As to where, we're quite a way from Earth, heading right now in the general direction of Altair. As to how—" He paused, looking keenly down at Kieran. "Don't you know how?"

*Of course I know. I was frozen, and now I have been awakened and time has gone by—*

Vaillant, looking searchingly down at his face, showed a trace of relief. "You do know, don't you? For a moment I was afraid it hadn't worked."

He sat down on the edge of the bunk.

"How long?" asked Kieran.

Vaillant answered as casually as though it was the most ordinary question in the world. "A bit over a century."

IT WAS wonderful, thought Kieran, how he could take a statement like that without getting excited. It was almost as though he'd known it all the time.

"How—" he began, when there was an interruption.

Something buzzed thinly in the pocket of Vaillant's shirt. He took out a thin three-inch disk of metal and said sharply into it, "Yes?"

A tiny voice squawked from the disk. It was too far from Kieran for him to understand what it was saying but it had a note of excitement, almost of panic, in it.

Something changed, hardened, in Vaillant's flat face. He said, "I expected it. I'll be right there. You know what to do."

He did something to the disk and spoke into it again. "Paula, take over here."

He stood up. Kieran looked up at him, feeling numb and stupid. "I'd like to know some things."

"Later," said Vaillant. "We've got troubles. Stay where you are."

He went rapidly out of the room. Kieran looked after him,

wondering. Troubles—troubles in a starship? And a century had passed—

He suddenly felt an emotion that shook his nerves and tightened his guts. It was beginning to hit him now. He sat up in the bunk and swung his legs out of it and tried to stand but could not, he was too weak. All he could do was to sit there, shaking.

His mind could not take it in. It seemed only minutes ago that he had been walking along the corridor in Wheel Five. It seemed that Wheel Five must exist, that the Earth, the people, the time he knew, must still be somewhere out there. This could be some kind of a joke, or some kind of psychological experiment. That was it—the space-medicine boys were always making way-out experiments to find out how men would bear up in unusual conditions, and this must be one of them—

A woman came into the room. She was a dark woman who might have been thirty years old, and who wore a white shirt and slacks. She would, he thought, have been good-looking if she had not looked so tired and so edgy.

She came over and looked down at him and said to him,

"Don't try to get up yet. You'll feel better very soon."

Her voice was a slightly husky one. It was utterly familiar to

Kieran, and yet he had never seen this woman before. Then it came to him.

"You were the one who talked to me," he said, looking up at her. "In the dreams, I mean."

She nodded. "I'm Paula Ray and I'm a psychologist. You had to be psychologically prepared for your awakening."

"Prepared?"

The woman explained patiently. "Hypnopedic technique—establishing facts in the subconscious of a sleeping patient. Otherwise, it would be too terrific a shock for you when you awakened. That was proved when they first tried reviving space-struck men, forty or fifty years ago."

THE comfortable conviction that this was all a fake, an experiment of some kind, began to drain out of Kieran. But if it was true—

He asked, with some difficulty, "You say that they found out how to revive space-frozen men, that long ago?"

"Yes."

"Yet it took forty or fifty years to get around to reviving me?"

The woman sighed. "You have a misconception. The process of revival was perfected that long ago. But it has been used only immediately after a wreck or disaster. Men or women in the old space-cemeteries have not been revived."

"Why not?" he asked carefully.

"Unsatisfactory results," she said. "They could not adjust psychologically to changed conditions. They usually became unbalanced. Some suicides and a number of cases of extreme schizophrenia resulted. It was decided that it was no kindness to the older space-struck cases to bring them back."

"But you brought me back?"

"Yes."

"Why?"

"There were good reasons." She was, clearly, evading that question. She went on quickly. "The psychological shock of awakening would have been devastating, if you were not prepared. So, while you were still under sedation, I used the hypnopedic method on you. Your unconscious was aware of the main facts of the situation before you awoke, and that cushioned the shock."

Kieran thought of himself, lying frozen and dead in a graveyard that was space, bodies drifting in orbit, circling slowly around each other as the years passed, in a macabre sarabande—A deep shiver shook him.

"Because all space-struck victims were in pressure-suits, dehydration was not the problem it could have been," Paula was saying. "But it's still a highly delicate process—"

He looked at her and inter-

rupted roughly. "What reasons?" And when she stared blankly, he added, "You said there were good reasons why you picked me for revival. What reasons?"

Her face became tight and alert. "You were the oldest victim, in point of date. That was one of the determining factors—"

"Look," said Kieran. "I'm not a child, nor yet a savage. You can drop the patronizing professional jargon and answer my question."

Her voice became hard and brittle. "You're new to this environment. You wouldn't understand if I told you."

"Try me."

"All right," she answered. "We need you, as a symbol, in a political struggle we're waging against the Sakae."

"The Sakae?"

"I told you that you couldn't understand yet," she answered impatiently, turning away. "You can't expect me to fill you in on a whole world that's new to you, in five minutes."

She started toward the door. "Oh, no," said Kieran. "You're not going yet."

He slid out of the bunk. He felt weak and shaky but resentment energized his flaccid muscles. He took a step toward her.

The lights suddenly went dim, and a bull-throated roar sounded



from somewhere, an appalling sound of raw power. The slight tingling that Kieran had felt in the metal fabric around him abruptly became a vibration so deep and powerful that it dizzied him and he had to grab the stanchion of the bunk to keep from falling.

Alarm had flashed into the woman's face. Next moment, from some hidden speaker in the wall, a male voice yelled sharply,

"Overtaken—prepare for extreme evasion—"

"Get back into the bunk," she told Kieran.

"What is it?"

"It may be," she said with a certain faint viciousness, "that you're about to die a second time."

### 3.

THE lights dimmed to semi-darkness, and the deep vibration grew worse. Kieran clutched the woman's arm.

"What's happening?"

"Damn it, let me go!" she said.

The exclamation was so wholly familiar in its human anger that Kieran almost liked her, for the first time. But he continued to hold onto her, although he did not feel that with his present weakness he could hold her long.

"I've a right to know," he said.

"All right, perhaps you have," said Paula. "We—our group—

are operating against authority. We've broken laws, in going to Earth and reviving you. And now authority is catching up to us."

"Another ship? Is there going to be a fight?"

"A fight?" She stared at him, and shock and then faint repulsion showed in her face. "But of course, you come from the old time of wars, you would think that—"

Kieran got the impression that what he had said had made her look at him with the same feelings he would have had when he looked at a decent, worthy savage who happened to be a cannibal.

"I always felt that bringing you back was a mistake," she said, with a sharpness in her voice. "Let me go."

She wrenched away from him and before he could stop her she had got to the door and slid it open. He woke up in time to lurch after her and he got his shoulder into the door-opening before she could slide it shut.

"Oh, very well, since you insist I'm not going to worry about you," she said rapidly, and turned and hurried away.

Kieran wanted to follow her but his knees were buckling under him. He hung to the side of the door-opening. He felt angry, and anger was all that kept him from falling over. He would not faint, he told himself. He was not

a child, and would not be treated like one—

He got his head outside the door. There was a long and very narrow corridor out there, blank metal with a few closed doors along it. One door, away down toward the end of the corridor, was just sliding shut.

HE started down the corridor, steadying himself with his hand against the smooth wall. Before he had gone more than a few steps, the anger that pushed him began to ebb away. Of a sudden, the mountainous and incredible fact of his being here, in this place, this time, this ship, came down on him like an avalanche from which the hypnopedic pre-conditioning would no longer protect him.

*I am touching a starship, I am in a starship, I, Reed Kieran of Midland Springs, Ohio. I ought to be back there, teaching my classes, stopping at Hartnett's Drug Store for a soft drink on the way home, but I am here in a ship fleeing through the stars*

...

His head was spinning and he was afraid that he was going to go out again. He found himself at the door and slid it open and fell rather than walked inside. He heard a startled voice.

This was a bigger room. There was a table whose top was translucent and which showed a be-

wildering mass of fleeting symbols in bright light, ever changing. There was a screen on one wall of the room and that showed nothing, a blank, dark surface.

Vaillant and Paula Ray and a tall, tough-looking man of middle age were around the table and had looked up, surprised.

Vaillant's face flashed irritation. "Paula, you were supposed to keep him in his cabin!"

"I didn't think he was strong enough to follow," she said.

"I'm not," said Kieran, and pitched over.

The tall middle-aged man reached and caught him before he hit the floor, and eased him into a chair.

He heard, as though from a great distance, Vaillant's voice saying irritably, "Let Paula take care of him, Webber. Look at this—we're going to cross another rift—"

There were a few minutes then when everything was very jumbled up in Kieran's mind. The woman was talking to him. She was telling him that they had prepared him physically, as well as psychologically, for the shock of revival, and that he would be quite all right but had to take things more slowly.

He heard her voice but paid little attention. He sat in the chair and blankly watched the two men who hung over the table and its flow of brilliant symbols. Vail-

lant seemed to tighten up more and more as the moments passed, and there was still about him the look of a coiled spring but now the spring seemed to be wound to the breaking-point. Webber, the tall man with the tough face, watched the fleeting symbols and his face was stony.

"Here we go," he muttered, and both he and Vaillant looked up at the blank black screen on the wall.

Kieran looked too. There was nothing. Then, in an instant, the blackness vanished from the screen and it framed a vista of such cosmic, stunning splendor that Kieran could not grasp it.

STARS blazed like high fires across the screen, loops and chains and shining clots of them. This was not too different from the way they had looked from Wheel Five. But what was different was that the starry firmament was partly blotted out by vast rifted ramparts of blackness, ebon cliffs that went up to infinity. Kieran had seen astronomical photographs like this and knew what the blackness was.

Dust. A dust so fine that its percentage of particles in space would be a vacuum, on Earth. But, here where it extended over parsecs of space, it formed a barrier to light. There was a narrow rift here between the titan cliffs

of darkness and he—the ship he was in—was fleeing across that rift.

THE screen abruptly went black again. Kieran remained sitting and staring at it. That incredible fleeting vision had finally impressed the utter reality of all this upon his mind. They, this ship, were far from Earth—very far, in one of the dust-clouds in which they were trying to lose pursuers. This was real.

"—will have got another fix on us as we crossed, for sure," Vaillant was saying, in a bitter voice. "They'll have the net out for us—the pattern will be shaping now and we can't slip through it."

"We can't," said Webber. "The ship can't. But the flitter can, with luck."

They both looked at Kieran. "He's the important one," Webber said. "If a couple of us could get him through—"

"No," said Paula. "We couldn't. As soon as they caught the ship and found the flitter gone, they'd be after him."

"Not to Sako," said Webber. "They'd never figure that we'd take him to Sako."

"Do I have a word in this?" asked Kieran, between his teeth.

"What?" asked Vaillant.

"This. The hell with you all. I'll go no place with you or for you."

HE got a savage satisfaction from saying it, he was tired of sitting there like a booby while they discussed him, but he did not get the reaction from them he had expected. The two men merely continued to look thoughtfully at him. The woman sighed,

"You see? There wasn't time enough to explain it to him. It's natural for him to react with hostility."

"Put him out, and take him along," said Webber.

"No," said Paula sharply. "If he goes out right now he's liable to stay out. I won't answer for it."

"Meanwhile," said Vaillant with an edge to his voice, "the pattern is forming up. Have you any suggestions, Paula?"

She nodded. "This."

She suddenly squeezed something under Kieran's nose, a small thing that she had produced from her pocket without his noticing it, in his angry preoccupation with the two men. He smelled a sweet, refreshing odor and he struck her arm away.

"Oh, no, you're not giving me any more dopes—" Then he stopped, for suddenly it all seemed wryly humorous to him. "A bunch of bloody incompetents," he said, and laughed. "This is the one thing I would never have dreamed—that a man could sleep, and wake up in a

starship, and find the starship manned by blunderers."

"Euphoric," said Paula, to the two men.

"At that," said Webber sourly, "there may be something in what he says about us."

Vaillant turned on him and said fiercely, "If that's what you think—" Then he controlled himself and said tightly, "Quarrelling's no good. We're in a box but we can maybe still put it over if we get this man to Sako. Webber, you and Paula take him in the flitter."

Kieran rose to his feet. "Fine," he said gaily. "Let us go in the flitter, whatever that is. I am already bored with starships."

He felt good, very good. He felt a little drunk, not enough to impede his mental processes but enough to give him a fine devil-may-care indifference to what happened next. So it was only the spray Paula had given him—it still made his body feel better and removed his shock and worry and made everything seem suddenly rather amusing.

"Let us to Sako in the flitter," he said. "After all, I'm living on velvet, I might as well see the whole show. I'm sure that Sako, wherever it is, will be just as full of human folly as Earth was."

"He's euphoric," Paula said again, but her face was stricken.

"Of all the people in that space-cemetery, we had to pick one who

thinks like that," said Vaillant, with a sort of restrained fury.

"You said yourself that the oldest one would be the best," said Webber. "Sako will change him."

Kieran walked down the corridor with Webber and Paula and he laughed as he walked. They had brought him back from nothingness without his consent, violating the privacy of death or near-death, and now something that he had just said had bitterly disappointed them.

"Come along," he said buoyantly to the two. "Let us not lag. Once aboard the flitter and the girl is mine."

"Oh for God's sake shut up," said Webber.

#### 4.

IT WAS ridiculous to be flying the stars with a bad hangover, but Kieran had one. His head ached dully, he had an unpleasant metallic taste in his mouth, and his former ebullience had given way to a dull depression. He looked sourly around.

He sat in a confined little metal coop of a cabin, hardly enough in which to stand erect. Paula Ray, in a chair a few feet away was sleeping, her head on her breast. Webber sat forward, in what appeared to be a pilot-chair with a number of crowded control banks in front of it. He

was not doing anything to the controls. He looked as though he might be sleeping, too.

That was all—a tiny metal room, blank metal walls, silence. They were, presumably, flying between the stars at incredible speeds but there was nothing to show it. There were no screens such as the one he had seen in the ship, to show by artful scanning devices what vista of suns and darkneses lay outside.

"A flitter," Webber had informed him, "just doesn't have room for the complicated apparatus that such scanners require. Seeing is a luxury you dispense with in a flitter. We'll see when we get to Sako."

After a moment he had added, "If we get to Sako."

Kieran had merely laughed then, and had promptly gone to sleep. When he had awakened, it had been with the euphoria all gone and with his present hangover.

"At least," he told himself, "I can truthfully say that this one wasn't my fault. That blasted spray—"

He looked resentfully at the sleeping woman in the chair. Then he reached and roughly shook her shoulder.

She opened her eyes and looked at him, first sleepily and then with resentment.

"You had no right to wake me up," she said.

Then, before Kieran could retort, she seemed to realize the monumental irony of what she had just said, and she burst into laughter.

"I'm sorry," she said. "Go ahead and say it. I had no right to wake you-up."

"Let's come back to that," said Kieran after a moment. "Why did you?"

Paula looked at him ruefully. "What I need now is a ten-volume history of the last century, and time enough for you to read it. But since we don't have either—" She broke off, then after a pause asked, "Your date was 1981, wasn't it? It and your name were on the tag of your pressure-suit."

"That's right."

"Well, then. Back in 1981, it was expected that men would spread out to the stars, wasn't it?"

Kieran nodded. "As soon as they had a workable high-speed drive. Several drives were being experimented with even then."

"One of them—the Flournoy principle—was finally made workable," she said. She frowned. "I'm trying to give you this briefly and I keep straying into details."

"Just tell me why you woke me up."

"I'm *trying* to tell you." She asked candidly, "Were you always so damned hateful or did

the revivification process do this to you?"

Kieran grinned. "All right. Go ahead."

THINGS happened pretty much as people foresaw back in 1981," she said. "The drive was perfected. The ships went out to the nearer stars. They found worlds. They established colonies from the overflowing population of Earth. They found human indigenous races on a few worlds, all of them at a rather low technical level, and they taught them.

"There was a determination from the beginning to make it one universe. No separate nationalistic groups, no chance of wars. The governing council was set up at Altair Two. Every world was represented. There are twenty-nine of them, now. It's expected to go on like that, till there are twenty-nine hundred starworlds represented there, twenty-nine thousand—any number. But—"

Kieran had been listening closely. "But what? What upset this particular utopia?"

"Sako."

"This world we're going to?"

"Yes," she said soberly. "Men found something different about this world when they reached it. It had people—human people—on it, very low in the scale of civilization."

"Well, what was the problem? Couldn't you start teaching them as you had others?"

She shook her head. "It would take a long while. But that wasn't the real problem. It was— You see, there's another race on Sako beside the human ones, and it's a fairly civilized race. The Sakae. The trouble is—the Sakae aren't human."

Kieran stared at her. "So what? If they're intelligent—"

"You talk as though it was the simplest thing in the world," she flashed.

"Isn't it? If your Sakae are intelligent and the humans of Sako aren't, then the Sakae have the rights on that world, don't they?"

She looked at him, not saying anything, and again she had that stricken look of one who has tried and failed. Then from up forward, without turning, Webber spoke.

"What do you think now of Vaillant's fine idea, Paula?"

"It can still work," she said, but there was no conviction in her voice.

"If you don't mind," said Kieran, with an edge to his voice, "I'd still like to know what this Sako business has to do with reviving me."

THE Sakae rule the humans on that world," Paula answered. "There are some of us who don't

believe they should. In the Council, we're known as the Humanity Party, because we believe that humans should not be ruled by non-humans."

Again, Kieran was distracted from his immediate question—this time by the phrase "Non-human".

"These Sakae—what are they like?"

"They're not monsters, if that's what you're thinking of," Paula said. "They're bipeds—lizardoid rather than humanoid—and are a fairly intelligent and law-abiding lot."

"If they're all that, and higher in development than the humans, why shouldn't they rule their own world?" demanded Kieran.

Webber uttered a sardonic laugh. Without turning he asked, "Shall I change course and go to Altair?"

"No!" she said. Her eyes flashed at Kieran and she spoke almost breathlessly. "You're very sure about things you just heard about, aren't you? You know what's right and you know what's wrong, even though you've only been in this time, this universe, for a few hours!"

Kieran looked at her closely. He thought he was beginning to get a glimmer of the shape of things now."

"You—all you who woke me up illegally—you belong to this

Humanity Party, don't you? You did it for some reason connected with that?"

"Yes," she answered defiantly. "We need a symbol in this political struggle. We thought that one of the oldtime space pioneers, one of the humans who began the conquest of the stars, would be it. We—"

Kieran interrupted. "I think I get it. It was really considerate of you. You drag a man back from what amounts to death, for a party rally. 'Oldtime space hero condemns non-humans'—it would go something like that, wouldn't it?"

"Listen—," she began.

"Listen, hell," he said. He was hot with rage, shaking with it. "I am glad to say that you could not possibly have picked a worse symbol than me. I have no more use for the idea of the innate sacred superiority of one species over another than I had for that of one kind of man over another."

Her face changed. From an angry woman, she suddenly became a professional psychologist, coolly observing reactions.

"It's not the political question you really resent," she said. "You've awakened to a strange world and you're afraid of it, in spite of all the pre-awakening preparation we gave your subconscious. You're afraid, and so you're angry."

Kieran got a grip on himself. He shrugged. "What you say may be true. But it doesn't change the way I feel. I will not help you one damned bit."

Webber got up from his seat and came back toward them, his tall form stooping. He looked at Kieran and then at the woman.

"We have to settle this right now," he said. "We're getting near enough to Sako to go out of drive. Are we going to land or aren't we?"

"Yes," said Paula steadily. "We're landing."

Webber glanced again at Kieran's face. "But if that's the way he feels—"

"Go ahead and land," she said.

## 5.

IT WAS nothing like landing in a rocket. First there was the business referred to as "going out of drive". Paula made Kieran strap in and she said, "You may find this unpleasant, but just sit tight. It doesn't last long." Kieran sat stiff and glowering, prepared for anything and determined not to show it no matter how he felt. Then Webber did something to the control board and the universe fell apart. Kieran's stomach came up and stuck in his throat. He was falling—up? Down? Sideways? He didn't know, but whichever it was not all the parts of him were



falling at the same rate, or perhaps it was not all in the same direction, he didn't know that either, but it was an exceptionally hideous feeling. He opened his mouth to protest, and all of a sudden he was sitting normally in the chair in the normal cabin and screaming at the top of his lungs.

He shut up.

Paula said, "I told you it would be unpleasant."

"So you did," said Kieran. He sat, sweating. His hands and feet were cold.

Now for the first time he became aware of motion. The flitter seemed to hurtle forward at comet-like speed. Kieran knew that this was merely an ironic little joke, because now they were proceeding at something in the range of normal velocity, whereas before their speed had been quite beyond his comprehension. But he could comprehend this. He could feel it. They were going like a bat out of hell, and somewhere ahead of them was a planet, and he was closed in, blind, a mouse in a nose-cone. His insides writhed with helplessness and the imminence of a crash. He wanted very much to start screaming again, but Paula was watching him.

In a few moments that desire became academic. A whistling shriek began faintly outside the hull and built swiftly to a point

where nothing could have been heard above it. Atmosphere. And somewhere under the blind wall of the flitter a rock-hard world-face reeling and rushing, leaping to meet them—

THE flitter slowed. It seemed to hang motionless, quivering faintly. Then it dropped. Express elevator in the world's tallest building, top to bottom—only the elevator is a bubble and the wind is tossing it from side to side as it drops and there is no bottom.

They hung again, bounding lightly on the unseen wind.

Then down.

And hang again.

And down.

Paula said suddenly, "Webber. Webber, I think he's dying." She began to unstrap.

Kieran said faintly, "Am I turning green?"

She looked at him, frowning. "Yes."

"A simple old malady. I'm seasick. Tell Webber to quit playing humming-bird and put this thing down."

Paula made an impatient gesture and tightened her belt again.

Hang and drop. Once more, twice more. A little rocking bounce, a light thump, motion ceased. Webber turned a series of switches. Silence.

Kieran said, "Air?"

WEBBER opened a hatch in the side of the cabin. Light poured in. It had to be sunlight, Kieran knew, but it was a queer color, a sort of tawny orange that carried a pleasantly burning heat. He got loose with Paula helping him and tottered to the hatch. The air smelled of clean sun-warmed dust and some kind of vegetation. Kieran climbed out of the flitter, practically throwing himself out in his haste. He wanted solid ground under him, he didn't care whose or where.

And as his boots thumped onto the red-ochre sand, it occurred to him that it had been a very long time since he had had solid ground underfoot. A very long time indeed—

His insides knotted up again, and this time it was not seasickness but fear, and he was cold all through, again in spite of the hot new sun.

He was afraid, not of the present, nor of the future, but of the past. He was afraid of the thing tagged Reed Kieran, the stiff blind voiceless thing wheeling its slow orbit around the Moon, companion to dead worlds and dead space, brother to the cold and the dark.

He began to tremble.

Paula shook him. She was talking but he couldn't hear her. He could only hear the rush of eternal darkness past his ears,

the thin squeak of his shadow brushing across the stars. Webber's face was somewhere above him, looking angry and disgusted. He was talking to Paula, shaking his head. They were far away. Kieran was losing them, drifting away from them on the black tide. Then suddenly there was something like an explosion, a crimson flare across the black, a burst of heat against the cold. Shocked and wild, the physical part of him clawed back to reality.

Something hurt him, something threatened him. He put his hand to his cheek and it came away red.

Paula and Webber were yanking at him, trying to get him to move.

A STONE whizzed past his head. It struck the side of the flitter with a sharp clack, and fell. Kieran's nervous relays finally connected. He jumped for the open hatch. Automatically he pushed Paula ahead of him, trying to shield her, and she gave him an odd startled look. Webber was already inside. More stones rattled around and one grazed Kieran's thigh. It hurt. His cheek was bleeding freely. He rolled inside the flitter and turned to look back out the hatch. He was mad.

"Who's doing it?" he demanded.

Paula pointed. At first Kieran was distracted by the strangeness of the landscape. The flitter crouched in a vastness of red-ochre sand laced with some low-growing plant that shone like metallic gold in the sunlight. The sand receded in tilted planes lifting gradually to a range of mountains on the right, and dropping gradually to infinity on the left. Directly in front of the flitter and quite literally a stone's throw away was the beginning of a thick belt of trees that grew beside a river, apparently quite a wide one though he could not see much but a tawny sparkling of water. The course of the river could be traced clear back to the mountains by the winding line of woods that followed its bed. The trees themselves were not like any Kieran had seen before. There seemed to be several varieties, all grotesque in shape and exotic in color. There were even some green ones, with long sharp leaves that looked like spearheads.

Exotic or not, they made perfectly adequate cover. Stones came whistling out of the woods, but Kieran could not see anything where Paula was pointing but an occasional shaking of foliage.

"Sakae?" he asked.

Webber snorted. "You'll know it when the Sakae find us. They don't throw stones."

"These are the humans," Paula said. There was an indulgent softness in her voice that irritated Kieran.

"I thought they were our dear little friends," he said.

"You frightened them."

"I frightened them?"

"They've seen the flitter before. But they're extremely alert to modes of behavior, and they knew you weren't acting right. They thought you were sick."

"So they tried to kill me. Nice fellows."

"Self-preservation," Webber said. "They can't afford the luxury of too much kindness."

"They're very kind among themselves," Paula said defensively. To Kieran she added, "I doubt if they were trying to kill you. They just wanted to drive you away."

"Oh, well," said Kieran, "in that case I wouldn't dream of disappointing them. Let's go."

Paula glared at him and turned to Webber. "Talk to them."

"I hope there's time," Webber grunted, glancing at the sky. "We're sitting ducks here. Keep your patient quiet—any more of that moaning and flopping and we're sunk."

HE picked up a large plastic container and moved closer to the door.

Paula looked at Kieran's cheek. "Let me fix that."

"Don't bother," he said. At this moment he hoped the Sakae, whoever and whatever they were, would come along and clap these two into some suitable place for the rest of their lives.

Webber began to "talk".

Kieran stared at him, fascinated. He had expected words—primitive words, perhaps resembling the click-speech of Earth's stone-age survivals, but words of some sort. Webber hooted. It was a soft reassuring sound, repeated over and over, but it was not a word. The rattle of stones diminished, then stopped. Webber continued to make his hooting call. Presently it was answered. Webber turned and nodded at Paula, smiling. He reached into the plastic container and drew forth a handful of brownish objects that smelled to Kieran like dried fruit. Webber tossed these out onto the sand. Now he made a different sound, a grunting and whuffling. There was a silence. Webber made the sound again.

On the third try the people came out of the woods.

In all there were perhaps twenty-five of them. They came slowly and furtively, moving a step or two at a time, then halting and peering, prepared to run. The able-bodied men came first, with one in the lead, a fine-looking chap in early middle age who was apparently the chief. The

women, the old men, and the children followed, trickling gradually out of the shadow of the trees but remaining where they could disappear in a flash if alarmed. They were all perfectly naked, tall and slender and large-eyed, their muscles strung for speed and agility rather than massive strength. Their bodies gleamed a light bronze color in the sun, and Kieran noticed that the men were beardless and smooth-skinned. Both men and women had long hair, ranging in color from black to tawny, and very clean and glistening. They were a beautiful people, as deer are a beautiful people, graceful, innocent, and wild. The men came to the dried fruits which had been scattered for them. They picked them up and sniffed them, bit them, then began to eat, repeating the grunt-and-whuffle call. The women and children and old men decided everything was safe and joined them. Webber tossed out more fruit, and then got out himself, carrying the plastic box.

WHAT does he do next?" whispered Kieran to Paula. "Scratch their ears? I used to tame squirrels this way when I was a kid."

"Shut up," she warned him. Webber beckoned and she nudged him to move out of the flitter. "Slow and careful."

Kieran slid out of the flitter. Big glistening eyes swung to watch him. The eating stopped. Some of the little ones scuttled for the trees. Kieran froze. Webber hooted and whuffed some more and the tension relaxed. Kieran approached the group with Paula. There was suddenly no truth in what he was doing. He was an actor in a bad scene, mingling with impossible characters in an improbable setting. Webber making ridiculous noises and tossing his dried fruit around like a caricature of somebody sowing, Paula with her brisk professionalism all dissolved in misty-eyed fondness, himself an alien in this time and place, and these perfectly normal-appearing people behaving like orang-utans with their fur shaved off. He started to laugh and then thought better of it. Once started, he might not be able to stop.

"Let them get used to you," said Webber softly.

Paula obviously had been here before. She had begun to make noises too, a modified hooting more like a pigeon's call. Kieran just stood still. The people moved in around them, sniffing, touching. There was no conversation, no laughing or giggling even among the little girls. A particularly beautiful young woman stood just behind the chief, watching the strangers

with big yellow cat-eyes. Kieran took her to be the man's daughter. He smiled at her. She continued to stare, deadpan and blank-eyed, with no answering flicker of a smile. It was as though she had never seen one before. Kieran shivered. All this silence and unresponsiveness became eerie.

"I'm happy to tell you," he murmured to Paula, "that I don't think much of your little pets?"

She could not allow herself to be sharply angry. She only said, in a whisper, "They are not pets, they are not animals. They—"

She broke off. Something had come over the naked people. Every head had lifted, every eye had turned away from the strangers. They were listening. Even the littlest ones were still.

Kieran could not hear anything except the wind in the trees.

"What—?" he started to ask.

Webber made an imperative gesture for silence. The tableau held for a brief second longer. Then the brown-haired man who seemed to be the leader made a short harsh noise. The people turned and vanished into the trees.

"The Sakae," Webber said. "Get out of sight." He ran toward the flitter. Paula grabbed Kieran's sleeve and pushed him toward the trees.

"What's going on?" he demanded as he ran.

"Their ears are better than ours. There's a patrol ship coming, I think."

THE shadows took them in, orange-and-gold-splashed shadows under strange trees. Kieran looked back. Webber had been inside the flitter. Now he tumbled out of the hatch and ran toward them. Behind him the hatch closed and the flitter stirred and then took off all by itself, humming.

"They'll follow it for a while," Webber panted. "It may give us a chance to get away." He and Paula started after the running people.

Kieran balked. "I don't know why I'm running away from anybody."

Webber pulled out a snub-nosed instrument that looked enough like a gun to be very convincing. He pointed it at Kieran's middle.

"Reason one," he said. "If the Sakae catch Paula and me here we're in very big trouble. Reason two—this is a closed area, and you're with us, so *you* will be in very big trouble." He looked coldly at Kieran. "The first reason is the one that interests me most."

Kieran shrugged. "Well, now I know." He ran.

Only then did he hear the low

heavy thrumming in the sky.

6.

THE sound came rumbling very swiftly toward them. It was a completely different sound from the humming of the flitter, and it seemed to Kieran to hold a note of menace. He stopped in a small clearing where he might see up through the trees. He wanted a look at this ship or flier or whatever it was that had been built and was flown by non-humans.

But Webber shoved him roughly on into a clump of squat trees that were the color of sherry wine, with flat thick leaves.

"Don't move," he said.

Paula was hugging a tree beside him. She nodded to him to do as Webber said.

"They have very powerful scanners." She pointed with her chin. "Look. They've learned."

The harsh warning barks of the men sounded faintly, then were hushed. Nothing moved, except by the natural motion of the wind. The people crouched among the trees, so still that Kieran would not have seen them if he had not known they were there.

The patrol craft roared past, cranking up speed as it went. Webber grinned. "They'll be a couple of hours at least, overhauling and examining the flitter. By that time it'll be dark,

and by morning we'll be in the mountains."

The people were already moving. They headed upstream, going at a steady, shuffling trot. Three of the women, Kieran noticed, had babies in their arms. The older children ran beside their mothers. Two of the men and several of the women were white-haired. They ran also.

"Do you like to see them run?" asked Paula, with a sharp note of passion in her voice. "Does it look good to you?"

"No," said Kieran, frowning. He looked in the direction in which the sound of the patrol craft was vanishing.

"Move along," Webber said. "They'll leave us far enough behind as it is."

KIERAN followed the naked people through the woods, beside the tawny river. Paula and Webber jogged beside him. The shadows were long now, reaching out across the water.

Paula kept glancing at him anxiously, as though to detect any sign of weakness on his part. "You're doing fine," she said. "You should. Your body was brought back to normal strength and tone, before you ever were awakened."

"They'll slow down when it's dark, anyway," said Webber.

The old people and the little children ran strongly.

"Is their village there?" Kieran asked, indicating the distant mountains.

"They don't live in villages," Paula said. "But the mountains are safer. More places to hide."

"You said this was a closed area. What is it, a hunting preserve?"

"The Sakae don't hunt them any more."

"But they used to?"

"Well," Webber said, "a long time ago. Not for food, the Sakae are vegetarians, but—"

"But," said Paula, "they were the dominant race, and the people were simply beasts of the field. When they competed for land and food the people were hunted down or driven out." She swung an expressive hand toward the landscape beyond the trees. "Why do you think they live in this desert, scraping a miserable existence along the watercourses? It's land the Sakae didn't want. Now, of course, they have no objection to setting it aside as a sort of game preserve. The humans are protected, the Sakae tell us. They're living their natural life in their natural environment, and when we demand that a program be—"

She was out of breath and had to stop, panting. Webber finished for her.

"We want them taught, lifted out of this naked savagery. The Sakae say it's impossible."

"Is it true?" asked Kiernan.

"No," said Paula fiercely. "It's a matter of pride. They want to keep their dominance, so they simply won't admit that the people are anything more than animals, and they won't give them a chance to be anything more."

There was no more talking after that, but even so the three outlanders grew more and more winded and the people gained on them. The sun went down in a blaze of blood-orange light that tinted the trees in even more impossible colors and set the river briefly on fire. Then night came, and just after the darkness shut down the patrol craft returned, beating up along the winding river bed. Kieran froze under the black trees and the hair lifted on his skin. For the first time he felt like a hunted thing. For the first time he felt a personal anger.

The patrol craft drummed away and vanished. "They won't come back until daylight," Webber said.

HE handed out little flat packets of concentrated food from his pockets. They munched as they walked. Nobody said anything. The wind, which had dropped at sundown, picked up from a different quarter and began to blow again. It got cold. After a while they caught up with the people, who had stopped

to rest and eat. The babies and old people for whom Kieran had felt a worried pity were in much better shape than he. He drank from the river and then sat down. Paula and Webber sat beside him, on the ground. The wind blew hard from the desert, dry and chill. The trees thrashed overhead. Against the pale glimmer of the water Kieran could see naked bodies moving along the river's edge, wading, bending, grubbing in the mud. Apparently they found things, for he could see that they were eating. Somewhere close by other people were stripping fruit or nuts from the trees. A man picked up a stone and pounded something with a cracking noise, then dropped the stone again. They moved easily in the dark, as though they were used to it. Kieran recognized the leader's yellow-eyed daughter, her beautiful slender height outlined against the pale-gleaming water. She stood up to her ankles in the soft mud, holding something tight in her two hands, eating.

The sweat dried on Kieran. He began to shiver.

"You're sure that patrol ship won't come back?" he asked.

"Not until they can see what they're looking for."

"Then I guess it's safe." He began to scramble around, feeling for dried sticks.

"What are you doing?"



"Getting some firewood."

"No." Paula was beside him in an instant, her hand on his arm, "No, you mustn't do that."

"But Webber said—"

"It isn't the patrol ship, Kieran. It's the people. They—"

"They what?"

"I told you they were low on the social scale. This is one of the basic things they have to be taught. Right now they still regard fire as a danger, something to run from."

"I see," Kieran said, and let the kindling fall. "Very well, if I can't have a fire, I'll have you. Your body will warm me." He pulled her into his arms.

SHE gasped, more in astonishment, he thought, than alarm. "What are you talking about?"

"That's a line from an old movie. From a number of old movies, in fact. Not bad, eh?"

He held her tight. She was definitely female. After a moment he pushed her away.

"That was a mistake. I want to be able to go on disliking you without any qualifying considerations."

She laughed, a curiously flat little sound. "Was everybody crazy in your day?" she asked. And then, "Reed—"

It was the first time she had used his given name. "What?"

"When they threw the stones,

and we got back into the flitter, you pushed me ahead of you. You were guarding me. Why?"

He stared at her, or rather at the pale blur of her standing close to him. "Well, it's always been sort of the custom for the men to— But now that I think of it, Webber didn't bother."

"No," said Paula. "Back in your day women were still taking advantage of the dual standard—demanding complete equality with men but clinging to their special status. We've got beyond that."

"Do you like it? Beyond, I mean."

"Yes," she said. "It was good of you to do that, but—"

Webber said, "They're moving again. Come on."

The people walked this time, strung out in a long line between the trees and the water, where the light was a little better and the way more open. The three outlanders tagged behind, clumsy in their boots and clothing. The long hair of the people blew in the wind and their bare feet padded softly, light and swift.

Kieran looked up at the sky. The trees obscured much of it so that all he could see was some scattered stars overhead. But he thought that somewhere a moon was rising.

He asked Paula and she said, "Wait. You'll see."

Night and the river rolled be-

hind them. The moonlight became brighter, but it was not at all like the moonlight Kieran remembered from long ago and far away. That had had a cold tranquility to it, but this light was neither cold nor tranquil. It seemed somehow to shift color, too, which made it even less adequate for seeing than the white moonlight he was used to. Sometimes as it filtered through the trees it seemed ice-green, and again it was reddish or amber, or blue.

They came to a place where the river made a wide bend and they cut across it, clear of the trees. Paula touched Kieran's arm and pointed. "Look."

Kieran looked, and then he stopped still. The light was not moonlight, and its source was not a moon. It was a globular cluster of stars, hung in the sky like a swarm of fiery bees, a burning and pulsing of many colors, diamond-white and gold, green and crimson, peacock blue and smoky umber. Kieran stared, and beside him Paula murmured, "I've been on a lot of planets, but none of them have anything like this."

The people moved swiftly on, paying no attention at all to the sky.

Reluctantly Kieran followed them into the obscuring woods. He kept looking at the open sky above the river, waiting for the

cluster to rise high so he could see it.

It was some time after this, but before the cluster rose clear of the trees, that Kieran got the feeling that something, or someone, was following them.

## 7.

HE had stopped to catch his breath and shake an accumulation of sand out of his boots. He was leaning against a tree with his back to the wind, which meant that he was facing their back-trail, and he thought he saw a shadow move where there was nothing to cast a shadow. He straightened up with the little trip-hammers of alarm beating all over him, but he could see nothing more. He thought he might have been mistaken. Just the same, he ran to catch up with the others.

The people were moving steadily. Kieran knew that their senses were far keener than his, and they were obviously not aware of any danger other than the basic one of the Sakae. He decided that he must have been seeing things.

But an uneasiness persisted. He dropped behind again, this time on purpose, after they had passed a clearing. He stayed hidden behind a tree-trunk and watched. The cluster-light was bright now but very confusing

to the eye. He heard a rustling that he did not think was wind, and he thought that something started to cross the clearing and then stopped, as though it had caught his scent.

Then he thought that he heard rustlings at both sides of the clearing, stealthy sounds of stalking that closed in toward him. Only the wind, he told himself, but again he turned to run. This time he met Paula, coming back to look for him.

"Reed, are you all right?" she asked. He caught her arm and pulled her around and made her run. "What is it? What's the matter?"

"I don't know." He hurried with her until he could see Webber ahead, and beyond him the bare backs and blowing hair of the people. "Listen," he said, "are there any predators here?"

"Yes," Paula said, and Webber turned sharply around.

"Have you seen something?"

"I don't know. I thought I did. I'm not sure."

"Where?"

"Behind us."

Webber made the harsh barking danger call, and the people stopped. Webber stood looking back the way they had come. The women caught the children and the men fell back to where Webber stood. They looked and listened, sniffing the air. Kieran listened too, but now he did not

hear any rustlings except the high thrashing of the branches. Nothing stirred visibly and the wind would carry away any warning scent.

The men turned away. The people moved on again. Webber shrugged.

"You must have been mistaken, Kieran."

"Maybe. Or maybe they just can't think beyond the elementary. If they don't smell it, it isn't there. If something is after us it's coming up-wind, the way any hunting animal works. A couple of the men ought to circle around and—"

"Come on," said Webber wearily.

THEY followed the people beside the river. The cluster was high now, a hive of suns reflected in the flowing water, a kaleidoscopic rippling of colors.

Now the women were carrying the smaller children. The ones too large to be carried were lagging behind a little. So were the aged. Not much, yet. Kieran, conscious that he was weaker than the weakest of these, looked ahead at the dim bulk of the mountains and thought that they ought to be able to make it. He was not at all sure that he would.

The river made another bend. The trail lay across the bend, clear of the trees. It was a wide

bend, perhaps two miles across the neck. Ahead, where the trail joined the river again, there was a rocky hill. Something about the outlines of the hill seemed wrong to Kieran, but it was too far away to be sure of anything. Overhead the cluster burned gloriously. The people set out across the sand.

Webber looked back. "You see?" he said. "Nothing."

They went on. Kieran was beginning to feel very tired now, all the artificial strength that had been pumped into him before his awakening was running out. Webber and Paula walked with their heads down, striding determinedly but without joy.

"What do you think now?" she asked Kieran. "Is this any way for humans to live?"

The ragged line of women and children moved ahead of them, with the men in the lead. It was not natural, Kieran thought, for children to be able to travel so far, and then he remembered that the young of non-predacious species have to be strong and fleet at an early age.

Suddenly one of the women made a harsh, shrill cry.

Kieran looked where she was looking, off to the left, to the river and the curving line of trees. A large black shadow slipped across the sand. He looked behind him. There were other shadows, coming with long

easy bounds out of the trees, fanning out in a shallow crescent. They reminded Kieran of some animal he had once seen in a zoo, a partly catlike, partly doglike beast, a cheetah he thought it had been called, only the cheetah was spotted like a leopard and these creatures were black, with stiff, upstanding ears. They bayed, and the coursing began.

"Nothing," said Kieran bitterly. "I count seven."

Webber said, "My God, I—"

THE people ran. They tried to break back to the river and the trees that could be climbed to safety, but the hunters turned them. Then they fled blindly forward, toward the hill. They ran with all their strength, making no sound. Kieran and Webber ran with them, with Paula between them. Webber seemed absolutely appalled.

"Where's that gun you had?" Kieran panted.

"It's not a gun, only a short-range shocker," he said. "It wouldn't stop these things. Look at them!"

They bounded, sporting around them, howling with a sound like laughter. They were as large as leopards and their eyes glowed in the cluster-light. They seemed to be enjoying themselves, as though hunting was the most delightful game in the world. One of them ran up



to within two feet of Kieran and snapped at him with its great jaws, dodging agilely when he raised his arm. They drove the people, faster and faster. At first the men had formed around the women and children. But the formation began to disintegrate as the weaker ones dropped behind, and no attempt was made to keep it. Panic was stronger than instinct now. Kieran looked ahead. "If we can make it to that hill—"

Paula screamed and he stumbled over a child, a girl about five, crawling on her hands and knees. He picked her up. She bit and thrashed and tore at him, her bare little body hard as whalebone and slippery with sweat. He could not hold onto her. She kicked herself free of his hands and rushed wildly out of reach, and one of the black hunters pounced in and bore her away, shrieking thinly like a fledgling bird in the jaws of a cat.

"Oh my God," said Paula, and covered her head with her arms, trying to shut out sight and sound. He caught her and said harshly, "Don't faint, because I can't carry you." The child's mother, whichever of the women it might have been, did not look back.

An old woman who strayed aside was pulled down and dragged off, and then one of the

white-haired men. The hill was closer. Kieran saw now what was wrong with it. Part of it was a building. He was too tired and too sick to be interested, except as it offered a refuge. He spoke to Webber, with great difficulty because he was winded. And then he realized that Webber wasn't there.

WEBBER had stumbled and fallen. He had started to get up, but the hunters were on him. He was on his hands and knees facing them, screaming at them to get away from him. He had, obviously, had little or no experience with raw violence. Kieran ran back to him, with Paula close behind.

"Use your gun!" he yelled. He was afraid of the black hunters, but he was full of rage and the rage outweighed the fear. He yelled at them, cursing them. He hurled sand into their eyes, and one that was creeping up on Webber from the side he kicked. The creature drew off a little, not frightened but surprised. They were not used to this sort of thing from humans. "Your gun!" Kieran roared again, and Webber pulled the snub-nosed thing out of his pocket. He stood up and said unsteadily, "I told you, it's not a gun. It won't kill anything. I don't think—"

"Use it," said Kieran. "And get moving again. Slowly."

They started to move, and then across the sky a great iron voice spoke like thunder. "Lie down," it said, "please. Lie down flat."

Kieran turned his head, startled. From the direction of the building on the hill a vehicle was speeding toward them.

"The Sakae," said Webber with what was almost a sob of relief. "Lie down."

As he did so, Kieran saw a pale flash shoot out from the vehicle and knock over a hunter still hanging on the flanks of the fleeing people. He hugged the sand. Something went whining and whistling over him, there was a thunk and a screech. It was repeated, and then the iron voice spoke again.

"You may get up now. Please remain where you are." The vehicle was much closer. They were bathed in sudden light. The voice said, "Mr. Webber, you are holding a weapon. Please drop it."

"It's only a little shocker," Webber said, plaintively. He dropped it.

The vehicle had wide tracks that threw up clouds of sand. It came clanking to a halt. Kieran, shading his eyes, thought he distinguished two creatures inside, a driver and a passenger.

THE passenger emerged, climbing with some difficulty

over the steep step of the track, his tail rattling down behind him like a length of thick cable. Once on the ground he became quite agile, moving with a sort of oddly graceful prance on his powerful legs. He approached, his attention centered on Kieran. But he observed the amenities, placing one delicate hand on his breast and making a slight bow.

"Doctor Ray." His muzzle, shaped something like a duck's bill, nevertheless formed Paula's name tolerably well. "And you, I think, are Mr. Kieran."

Kieran said, "Yes." The star-cluster blazed overhead. The dead beasts lay behind him, the people with their flying hair had run on beyond his sight. He had been dead for a hundred years and now he was alive again. Now he was standing on alien soil, facing an alien form of life, communicating with it, and he was so dog-tired and every sensory nerve was so thoroughly flayed that he had nothing left to react with. He simply looked at the Saka as he might have looked at a fence-post, and said, "Yes."

The Saka made his formal little bow again. "I am Bregg." He shook his head. "I'm glad I was able to reach you in time. You people don't seem to have any notion of the amount of trouble you make for us—"

Paula, who had not spoken since the child was carried off,

suddenly screamed at Bregg, "Murderer!"

She sprang at him, striking him in blind hysteria.

8.

BREGG sighed. He caught Paula in those fine small hands that seemed to have amazing strength and held her, at arm's length. "Doctor Ray," he said. He shook her. "Doctor Ray." She stopped screaming. "I don't wish to administer a sedative because then you will say that I drugged you. But I will if I must."

Kieran said, "I'll keep her quiet."

He took her from Bregg. She collapsed against him and began to cry. "Murderers," she whispered. "That little girl, those old people—"

Webber said, "You could exterminate those beasts. You don't have to let them hunt the people like that. It's—it's—"

"Unhuman is the word you want," said Bregg. His voice was exceedingly weary. "Please get into the car."

They climbed in. The car churned around and sped back toward the building. Paula shivered, and Kieran held her in his arms. Webber said after a moment or two, "How did you happen to be here, Bregg?"

"When we caught the flitter

and found it empty, it was obvious that you were with the people, and it became imperative to find you before you came to harm. I remembered that the trail ran close by this old outpost building, so I had the patrol ship drop us here with an emergency vehicle.

Kieran said, "You knew the people were coming this way?"

"Of course." Bregg sounded surprised. "They migrate every year at the beginning of the dry season. How do you suppose Webber found them so easily?"

Kieran looked at Webber. He asked, "Then they weren't running from the Sakae?"

"Of course they were," Paula said. "You saw them yourself, cowering under the trees when the ship went over."

"The patrol ships frighten them," Bregg said. "Sometimes to the point of stampeding them, which is why we use them only in emergencies. The people do not connect the ships with us."

"That," said Paula flatly, "is a lie."

Bregg sighed. "Enthusiasts always believe what they want to believe. Come and see for yourself."

She straightened up. "What have you done to them?"

"We've caught them in a trap," said Bregg, "and we are presently going to stick needles into them—a procedure necessi-



tated by your presence, Doctor Ray. They're highly susceptible to imported viruses, as you should remember—one of your little parties of do-gooders succeeded in wiping out a whole band of them not too many years ago. So—inoculations and quarantine."

LIGHTS had blazed up in the area near the building. The car sped toward them.

Kieran said slowly, "Why don't you just exterminate the hunters and have done with them?"

"In your day, Mr. Kieran—yes, I've heard all about you—in your day, did you on Earth exterminate the predators so that their natural prey might live more happily?"

Bregg's long muzzle and sloping skull were profiled against the lights.

"No," said Kieran, "we didn't. But in that case, they were all animals."

"Exactly," said Bregg. "No, wait, Doctor Ray. Spare me the lecture. I can give you a much better reason than that, one even you can't quarrel with. It's a matter of ecology. The number of humans destroyed by these predators annually is negligible but they do themselves destroy an enormous number of small creatures with which the humans compete for their food. If

we exterminated the hunters the small animals would multiply so rapidly that the humans would starve to death."

The car stopped beside the hill, at the edge of the lighted area. A sort of makeshift corral of wire fencing had been set up, with wide wings to funnel the people into the enclosure, where a gate was shut on them. Two Sakae were mounting guard as the party from the car approached the corral. Inside the fence Kieran could see the people, flopped around in positions of exhaustion. They did not seem to be afraid now. A few of them were drinking from a supply of water provided for them. There was food scattered for them on the ground.

Bregg said something in his own language to one of the guards, who looked surprised and questioned him, then departed, springing strongly on his powerful legs. "Wait," said Bregg.

They waited, and in a moment or two the guard came back leading one of the black hunting beasts on a chain. It was a female, somewhat smaller than the ones Kieran had fought with, and having a slash of white on the throat and chest. She howled and sprang up on Bregg, butting her great head into his shoulder, wriggling with delight. He petted her, talking to her, and

she laughed dog-like and licked his cheek.

"They domesticate well," he said. "We've had a tame breed for centuries."

HE moved a little closer to the corral, holding tight to the animal's chain. Suddenly she became aware of the people. Instantly the good-natured pet turned into a snarling fury. She reared on her hind legs and screamed, and inside the corral the people roused up. They were not frightened now. They spat and chattered, clawing up sand and pebbles and bits of food to throw through the fence. Bregg handed the chain to the guard, who hauled the animal away by main force.

Paula said coldly, "If your point was that the people are not kind to animals, my answer is that you can hardly blame them."

"A year ago," Bregg said, "some of the people got hold of her two young ones. They were torn to pieces before they could be saved, and she saw it. I can't blame her, either."

He went on to the gate and opened it and went inside. The people drew back from him. They spat at him, too, and pelted him with food and pebbles. He spoke to them, sternly, in the tone of one speaking to unruly dogs, and he spoke words, in his own tongue. The people began to

shuffle about uneasily. They stopped throwing things. He stood waiting.

The yellow-eyed girl came sidling forward and rubbed herself against his thigh, head, shoulder and flank. He reached down and stroked her, and she whimpered with pleasure and arched her back.

"Oh, for God's sake," said Kieran, "let's get out of here."

LATER, they sat wearily on fallen blocks of cement inside a dusty, shadowy room of the old building. Only a hand-lamp dispelled the gloom, and the wind whispered coldly, and Bregg walked to and fro in his curious prance as he talked.

"It will be a little while before the necessary medical team can be picked up and brought here," he said. "We shall have to wait."

"And then?" asked Kieran.

"First to—" Bregg used a word that undoubtedly named a city of the Sakae but that meant nothing to Kieran, "—and then to Altair Two. This, of course, is a council matter."

He stopped and looked with bright, shrewd eyes at Kieran. "You are quite the sensation already, Mr. Kieran. The whole community of starworlds is already aware of the illegal resuscitation of one of the pioneer spacemen, and of course there is great interest." He paused.

"You, yourself, have done nothing unlawful. You cannot very well be sent back to sleep, and undoubtedly the council will want to hear you. I am curious as to what you will say."

"About Sako?" said Kieran. "About—them?" He made a gesture toward a window through which the wind brought the sound of stirring, of the gruntings and whuffings of the corralled people.

"Yes. About them."

"I'll tell you how I feel," Kieran said flatly. He saw Paula and Webber lean forward in the shadows. "I'm a human man. The people out there may be savage, low as the beasts, good for nothing the way they are—but they're human. You Sakae may be intelligent, civilized, reasonable, but you're not human. When I see you ordering them around like beasts, I want to kill you. That's how I feel."

Bregg did not change his bearing, but he made a small sound that was almost a sigh.

"Yes," he said. "I feared it would be so. A man of your times—a man from a world where humans were all-dominant—would feel that way." He turned and looked at Paula and Webber. "It appears that your scheme, to this extent, was successful."

"No, I wouldn't say that," said Kieran.

Paula stood up. "But you just told us how you feel—"

"And it's the truth," said Kieran. "But there's something else." He looked thoughtfully at her. "It was a good idea. It was bound to work—a man of my time was bound to feel just this way you wanted him to feel, and would go away from here crying your party slogans and believing them. But you overlooked something—"

He paused, looking out the window into the sky, at the faint vari-colored radiance of the cluster.

YOU overlooked the fact that when you awoke me, I would no longer be a man of my own time—or of any time. I was in darkness for a hundred years—with the stars my brothers, and no man touching me. Maybe that chills a man's feelings, maybe something deep in his mind lives and has time to think. I've told you how I feel, yes. But I haven't told you what I think—"

He stopped again, then said, "The people out there in the corral have my form, and my instinctive loyalty is to them. But instinct isn't enough. It would have kept us in the mud of Earth forever, if it could. Reason took us out to the wider universe. Instinct tells me that those out there are my people. Reason tells me that you—" he looked at

Bregg, "—who are abhorrent to me, who would make my skin creep if I touched you, you who go by reason—that you are my real people. Instinct made a hell of Earth for millennia—I say we ought to leave it behind us there in the mud and not let it make a hell of the stars. For you'll run into this same problem over and over again as you go out into the wider universe, and the old parochial human loyalties must be altered, to solve it."

He looked at Paula and said,

"I'm sorry, but if anyone asks me, that is what I'll say."

"I'm sorry, too," she said, rage and dejection ringing in her voice. "Sorry we woke you. I hope I never see you again."

Kieran shrugged. "After all, you did wake me. You're responsible for me. Here I am, facing a whole new universe, and I'll need you." He went over and patted her shoulder.

"Damn you," she said. But she did not move away from him.

THE END

### COMING NEXT MONTH

The first of a series of far-reaching explorations of extra-terrestrial life headlines the June issue of **AMAZING STORIES**.



Expert Ben Bova surveys the possibility of life in the universe from an astronomical and a biochemical viewpoint. Don't miss the start of what will be an exciting, highly readable and informative series.

The twin fiction stars of the June **AMAZING** are *Thunder in Space*, a Lester del Rey story of tension in the U.S. Soviet satellites that circle the earth; and W. K. Sonnemann's great *The Council of Drones*, a Classic Reprint.

**ALSO** in the issue a Sam Moskowitz profile of Clifford Simak, outstanding short stories and the usual departments. Don't miss the June **AMAZING**, on sale at your newsstand May 10.

# COSMIC CARAVEL

By FRANK TINSLEY

**Will ever-blowing solar trade winds some day propel our silver-sailed argosies of space?**

SINCE the beginning of recorded time mankind has worshipped the sun as King of the Heavens and the Giver of Life. In ancient days, the center of our solar system was thought to be a great, fiery god, whose brilliance blinded mortal eyes. Even today, in some backward areas, the sun is still venerated as a divinity. Enlightened man, however, knows the sun for what it really is—a colossal, ever-burning hydrogen bomb whose explosive “flares” control our environment, weather, and even our physical and mental well-being. He knows, too, that the unending succession of solar explosions give off continuous waves of dynamic radiation. Expanding outward through space, this constant electrical flood carries a measurable force and has been dubbed by scientists the “Solar Wind” or “Photon Breeze.”

While its impact is extremely small as compared with our earthly gales—about the weight

of four cigarets per acre—it is ample, in the friction-free vacuum of space, to drive a vehicle at constantly accelerating speeds.

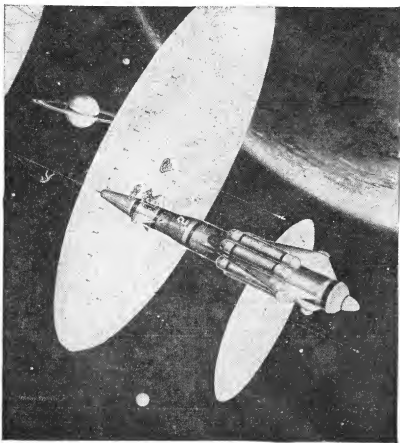
The possibility of harnessing this solar wind was conceived by Dr. Theodore P. Cotter of the Los Angeles Atomic Research Laboratories. Dr. Cotter, an old sailboat hand, long familiar with the management of wind and canvas, envisions a vessel with a gossamer-like “sail” of plastic film coated with a shiny surface of evaporated aluminum. He calculates that a circular sail some 50 yards in diameter and weighing about 25 pounds is sufficient to propel itself plus another 25 pounds of hull and payload.

His first thought was to rocket a small vehicle of this weight into space and, at its apogee, spin it to spread its sail by centrifugal force. This project, based on today's limited booster capabilities, would prove his theories. In later, larger ships,

planned for assembly in orbit, Dr. Cotter envisions a sail-supporting framework of airtight plastic tubes, stiffened after inflation by a filler of lightweight foamed plastic. After setting, this structure of radiating ribs and connecting membranes would resemble a dragonfly's wing in circular form. The vehi-

cle's body would occupy the center, like a tiny spider in its far-flung web.

**I**N the accompanying illustration, this basic concept has been expanded to a size capable of carrying a vessel and crew on interplanetary voyages. This queen-size cosmic clipper-



Reproduced by Courtesy of American-Bosch Arma Corp.

spreads a circular sail *several miles* in diameter. It differs from Dr. Cotter's design in that the stiffened tubes are cross-braced by a system of light masts and glass filament rigging. This rigging is adjustable from the center and permits a certain amount of "wing warping" as was used in early airplanes. The camber of the sail can thus be controlled and the vehicle steered "into the wind" like a well designed sailboat.

If the area mentioned *seems* impossible to achieve, we must remember that it is built and designed to operate under weightless conditions—and that our terrestrial stresses and strains do not apply. On earth, a girder only a fraction of the projected lengths would buckle under its own weight. In space, however, the same girder would float around intact. Where a team of powerful cranes would be required to lift and move it on earth, in space it would respond to the merest push of a workman's fingertip. There, the rig is subject to but two forces—that of the tiny pressures of electronic winds, and the pull of the controlling rigging with its minor bending strains. So the lightest possible membrane would suffice as sails, hair-thin cables (spun glass filament has a thousand times steel's tensile strength) could brace and bend it.

In the center of this fantastic sail is an inflated, wheel shaped hull, much like the space station shown in the first illustration of this series. Mounted on gimbal bearings, the wheel is free to revolve in any direction. This movement serves two purposes. Inside the hull, it provides artificial gravity for the vessel's crew. Acting as an outsize gyroscopic wheel of great relative weight, it can vary and correct the vehicle's attitude and angle to the wind. The latter can thus be swung broadside to a following wind, turned edge-on to "lay to" or hover, or set at any angle for working into the wind. Our vehicle can therefore be "tacked" (zig-zagged) toward the sun, coasted "downhill" away from it or sailed at any angle relative to the solar breeze. Thus, its pilot can set a course for any destination in the solar system and the gyro/hull will keep the ship on course automatically, with due allowance for drift. If necessary, a small electronic rocket engine can be used to neutralize the latter force, much as a keel functions in a sailboat.

LIKE the Stuhlinger sun-power ship described in March AMAZING, Dr. Cotter's Caravel can operate only in weightless, frictionless space—from one satellite station to another. Where these bases are absent, as

in exploration trips, it can still function if it stays beyond critical gravitational pull. Entering into orbit around its destination, the Caravel can send a crew down to the surface in a conventional rocket "small-boat". Several of these tenders are shown in the illustration, each towed behind its mother vessel like the longboat of an old-time sailing ship. In the foreground, space-suited crewmen slide down the towline and enter the tender's cabin, preparatory to a landing on one of Saturn's nine moons. In the upper right-hand corner is their target, Titan, 3550 miles in diameter and known to have an atmosphere.

The tender shown is an atomic-powered vehicle with a heat absorbing tail-cone and petal type doors enclosing its rocket nozzle. It is equipped with a belt of exterior tanks containing an auxiliary supply of liquid hydrogen. This gas is employed as the engine's operating fluid. The exterior supply is used in the tender's descent and landing and its internal tanks for the take-off and return. Current experiments indicate that the tanks may eventually be refilled in flight by collecting and compressing the traces of free hydrogen present in space. If successful, the little ferries will be capable of a number of trips between the mother ship and planetary destination.

A voyage in one of these cosmic windships can be pre-programmed almost as precisely as that of a powered vessel. Under normal conditions, the propulsive force of the solar wind will be reasonably predictable, as will the ship's resultant drift. By plotting the courses necessary to reach a given destination and considering the vehicle's established speeds at various sailing angles, a fairly accurate flight plan can be prepared. It will, of course, be subject to cosmic storms caused by solar flares, but these will affect any vessel traversing interplanetary routes.

ON this particular trip, we board our Caravel from a lunar satellite station. Part of a scientific expedition bound on a survey voyage to the Saturn complex, our ship is one of a fleet of five, each charged with a specific area of investigation. Saturn's moons have, of course, been visited a number of times during the past few years and as a result, we have excellent photographs and considerable information about surface conditions. Our job is to set up temporary camps and develop more precise data as to the colonization and exploitation possibilities of the various bodies. While on the surface, we will live aboard our grounded tenders and, with this in view, they have been packed



with an assortment of special supplies and research equipment.

The outward trip starts uneventfully. Except for a violent solar flare which, luckily, is not in our direct sector of influence, the first two weeks are given over to shake-down procedures and indoctrination. After that we buckle down to work, passing the time in study and drills, each team learning its individual duties by rote. Life in our roving spinning-wheel is much like earlier tours of duty we have all performed in space stations, and the daily routine is soothingly familiar. The only perceptible difference from orbital service lies in the vast expanse of shining sail area that surrounds our moving home. Reaching out a mile or so on all sides, it glitters in the sunlight like an illimitable ice field. Sometimes we catch its full, blinding glare as we revolve. On other courses, when the sail is trimmed at an angle to the wind, we enjoy a dramatic play of intense light and heavy, blue-black shade. Spaced at intervals around us, the other ships of the fleet slip along in tight formation, providing a thrilling spectacle of cosmic beauty. Needless to say, our cameras are busy each time the

wind-borne squadron changes its heading.

Several more storms intervene before we approach our destination. No particular discomfort is involved in these surges of electronic wind but they give our pilots a busy time and keep our computers ticking. The added drift throws the fleet off course and must be corrected for. To the pilot, cosmigation is a bit more complicated than earthly navigation as it involves movement in a third dimension. However, the various planets are always clearly visible and bearings can be easily obtained. With data from their established tables of movements, the electronic brains in our control rooms come up with all the necessary answers and sails are trimmed to bring us back on course.

When we reach the vicinity of Saturn the fleet breaks up, each ship proceeding to its initial objective. Ours is Titan, one of the larger moons. A few days later we back sail, brake our speed and loop around Titan in a far-out orbit. Odd looking as she seemed to us at first, our Caravel has proved to be an able and comfortable craft, and her system of solar wind propulsion a sound one.

**THE END**

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# THE PROTECTOR

By JOHN JAKES

*Nuclear war won't change everything—necessarily.*

*For example, there will still be some  
point to asking that old riddle: Who'll  
take care of the caretaker while the  
caretaker's busy taking care?*

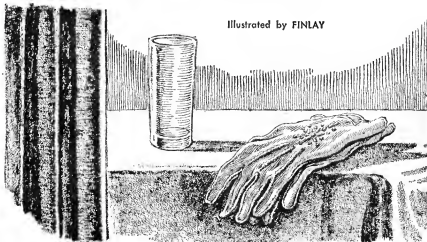
I'M worried.

I should call the doctor but I'm afraid he won't answer. In a few minutes the sun will sink. It

will be time for the greenup. My lapses of memory are worst during the greenup.

Of course I struggle hard

Illustrated by FINLAY





against them. My responsibility as the protector of Gurleyville gives me the strength. The lapses so far have been short, no more than ten or fifteen minutes each. When they're over I can build everything again by reminding myself that my name is Lemke. The name is the key that unlocks the door that hides everything that disappears during the lapses, as if I'd been asleep. But of course I haven't been asleep.

I never sleep too long. My responsibility as protector is heavy.

What about the tense?

Just a second. My name is Lemke. There.

Lemke is, and was, my name when I woke up at first light. The first sound I heard was a rooster crowing on one of the farms beyond the village limits. I rose, ate two from my dwindling hoard of Nelson's Crackers. Following this breakfast, I washed out some underwear in what was once the janitor's closet. I carried the laundry outside and hung it from the lowest crossbars of the station transmitter. That was a mistake, but how could I know that then?

The sun was almost up. A faint mist hung over the shimmering lake. All the trees on the slopes above the shore had already turned scarlet and yellow. It was the early part of August. Fall nipped the air.

I drew in deep breaths, glad I was alive to hold a position of responsibility in the town I could see nestled at the lower end of the lake, just at the foot of the hill on which the concrete-block station building and transmitter tower sat. I figured the hour to be a little past eight. What with eating and washing, I was rather slow getting started on my rounds.

**B**EFORE leaving the station, I dialed Doc Mayhew's home phone.

"Mayhew speaking." The voice was coarse, sleepy-thick and made me smile.

"This is Lemke, doc. I had the trouble again last night."

"Oh? That's bad news, Lemke. How long did it last?"

"Everything blacked out for twelve or thirteen minutes."

"I recommend aspirin, aspirin and as much rest as possible. Also plenty of liquids."

"Thanks, doc. I just wanted to check."

"Take care of yourself, boy." In the middle of the sentence his voice shifted timbre, which made me frown: "We need you, boy. Gurleyville needs you. Couldn't do without you, remember."

"I'll remember, doc. Aspirin and rest and liquids. Thanks."

"Goodbye, Lemke. I must be off to the hospital soon. Elvira is making breakfast now."

"Yes, doc, I know. So long."

I hung up, pleased as always by the tone of concern in his voice when he told me how important I was to the town. Of course I'd known it all along, but a man needs reassurance, the comfort of a friend's voice, in lean times.

Without further fuss I tramped the macadam road leading from the station to the village limits. Elms and maples rustled as I passed, a dry, pleasantly natural sound. Many of the leaves were dropping, whipped by a brisk breeze out of Canada. There was hardly a trace of the cloud in the sky. The air was cold, though, and my jacket was thin. I shivered. But when I reached the first houses on Berry Street, the chill became less bothersome.

From the Potters' kitchen, out of sight at the back of a frame bungalow, kids gabbled over breakfast. In Rab Samuels' garage I heard the noise of a Ford turning over roughly. A dog barked, hidden among the poplars screening the Johnsons' house on the corner. The motor of the school bus purred a block away. On the salt works railroad spur at the foot of Main Street a freight sounded its whistle. Inside the Paradise Cafe on Main, the jukebox was already whining and moaning.

Just as I was entering White-

law's Lake Tap, I happened to glance up. What prompted me, I'm not sure. What I saw was unmistakable, though. Main Street is low in relation to the hills rising around the lake. A stretch of the state highway atop the east shore bluffs is plainly visible from outside Whitelaw's, over the roof of the Paradise. On the skyline, black and fast, raced an automobile.

I sucked a deep breath. My plans turned cold again. From the silhouette I judged the car to be a '67 or possibly a '68 Chevy, exactly which I couldn't remember because I didn't know in which year the missile-like protruberances had appeared on the front fenders.

For a minute more I watched the automobile. Then it disappeared behind the trees. Heading for Gurleyville, down and down along the twisting state road.

It would arrive within ten minutes. At first I was alarmed. Then I congratulated myself over the fact that I really had nothing to be alarmed about. I'd locked the station behind me, hadn't I? No one could tell about the cables.

THE interior of the Lake Tap was, as usual, practically black. Whitey Whitelaw always operated on the principle that people didn't visit a bar to display themselves. They wanted

privacy with their liquor, because liquor brought out a person's most private thoughts. That suited me fine.

Being very familiar with the place, I lifted the hinged section of the back bar, took down a partially empty fifth of rye from the shelf and a shot glass from the stainless steel drying rack beneath the bar proper. I rang up eighty cents on the cash register. In the shadows at the rear of the bar a voice spoke up:

"Morning, friend."

"Morning, Whitey. How's everything today?"

"Very fine, very fine. Help yourself to another when you finish that one. On the house."

"Sorry, Whitey," I said firmly. "I've got a job of protecting to do."

"Ah, that's right, I forgot." The low, grumbling tone unfortunately didn't match the first friendly words of greeting. I tried not to be too fussy about inflections, however. "Your girl is waiting for you in number two."

I carried the brimming shot from behind the bar. "Thanks, Whitey."

I crossed the room toward the row of shadowy booths, practically pitch dark because Whitey had closed the front blinds years ago and kept them closed ever since. As always, I tried to visualize her. It was a little game

I played, teasing myself with the details of her yellow hair, her cornflower-blue eyes, her magnificent young and sweet body.

I slid into the booth and took a sip of the rye. In the thickness of the shadows I could barely make out a beer can, an empty glass and a pair of ladies' white gloves resting on the tabletop near the can.

"Would you like another beer, Sophie?" I tried to sound shy as usual.

"Not this morning, Lemk." Her voice was throaty. The words made my spine tingle.

"The name is Lemke," I replied, smiling at my own little joke.

"I know, but I say Lemk."

"If that's the best you can do!"

"Don't tease me, darling. Don't be angry with me." The voice dropped low, smoky-warm. "I love you."

I stared hard at the white gloves. "Sophie, I love you too. But it's hopeless."

"Why is it hopeless?" A hint of tears quivered in the words. "I know you always tell me it's hopeless but I can't believe you're so cold that you don't love me the way I love you. God, Lemk, I love you so much I'd do anything for you."

"I understand that, Sophie," I answered. I drank the rye quickly. "I'm sorry."

"Don't you think I'm beautiful? I'm the most beautiful girl in town."

"You're lovely, absolutely lovely."

"Then why is it hopeless, darling? Why must it be hopeless?"

THE bittersweet quality of the situation always twisted me up inside, brought loneliness and pride all at once. Rapidly I drained the remainder of the rye.

"Sophie, Gurleyville needs a protector. The job fell to me by accident. But since I've got it, I have to perform it. Regardless of personal considerations. Oh sure, I'd much rather sit here day in and day out, drinking with you, but it's impossible if I'm going to do the job properly."

I lifted my shoulders, squared them slightly, not wanting to sound overly boastful about my position but still concealing my pride with difficulty: "I have to accept loneliness, Sophie. I'm the protector. Yours, Whitey's, Doc Mayhew's, everybody's."

"You're a noble man, Lemk." The tears, so rich and throbbing, stirred me. She had a way of crying that continually revealed hidden undertones and overtones. "The noblest man in a rotten world and I love you with all my soul and wish we could be together the rest of our lives."

"Impossible, Sophie."

The spell was so complete I

thought about pouring myself another rye until I recalled that when we ran out of conversation, the silence was awkward. Besides, she'd already said everything I wanted to hear. I remembered the Chevvy on the skyline suddenly.

I wasn't particularly alarmed about it, just vaguely apprehensive. Perhaps I ought to take a trip up Main and see whether the car had passed through.

I patted one of the white gloves, carried my shot glass to the bar, rinsed it and replaced it in the stainless steel rack. Just as I reached the threshold her voice cried out behind me, soft in its torment:

"Oh, Lemk, I love you so much!"

"Goodbye, Sophie." I said it without turning around.

I GLANCED up and down the street. No sign of the Chevvy among all the automobiles parked at the meters along Main. Moving back in the direction of the station, I thought again that if Chief Chesterfield ever really turned on the heat, he'd make a fortune in Gurleyville, since all the parking meters showed a red-sprung Expired tag and total disregard for law and order.

Oh, well. I couldn't count on Chief Chesterfield too heavily. The protector's lot was mine and mine alone.

In front of the IGA Superfoods, hearing the rattle of shopping carts and the jinga-jinga-jinga of tallying cash registers, I stopped. My stomach hurt. I first wondered whether it was a lapse of memory. Then I realized it wasn't. I had complete recall of my conversation with Whitey and Sophie, not to mention my talk with Doc Mayhew and my morning walk down Berry to Main. It was the laundry.

I'd completely forgotten the laundry.

The state highway twisted past the hill on which the station was built. Whoever was driving that Chevy would see the laundry and reach an inescapable conclusion.

I was terribly frightened. It's one thing to talk and talk about being the protector, another to be faced with a test. I walked quickly. Two doors beyond the Paradise Café was Samuels' Hardware & Variety. I went inside, came out again in less than a minute with the gun crooked in my right elbow.

It looked rather small. I turned it this way and that, figuring out its firing mechanism. Crouching in the doorway of the Hardware & Variety, I tore open the cardboard carton and loaded the gun. Its hard blackness comforted me in spite of the light weight. Still, it was a weapon. I hefted it as I

marched along in the August sun.

There was no sign of the Chevy yet. But of course there wouldn't be. The laundry flapping from the tower would stop them.

On the corner of Berry and Main stood the familiar public telephone booth. I needed reassurance. I slipped inside, shut the door, kept an eye out as I fed my one dime into the slot. A moment before the voice answered the dime was returned:

"Gurleyville Police Headquarters, Chief Chesterfield speaking."

"Chief, this is Lemke." I tried to remember what I ought to say but I was sweating too hard. There was an awkward pause until I thought of it: "Can you give me any help?"

"None today, Lemke, sorry. All my men are out in the cars."

"Chief, this is a genuine emergency. There's a strange Chevy—"

The heavy official voice interrupted me at the end of the first sentence: "You'll have to handle it alone, Lemke. You're the protector. We depend on you, boy. We count on you because we know you've got the stuff. Lemke, it's an honor to tell you—"

**F**OR God's sake stop talking and listen!" Then I swallowed, leaning against the glass of the cubicle, disturbed by how overwrought I'd become. My re-



mark to Chief Chesterfield was absurd.

"—only man in Gurleyville with the guts for the job. Now stick to it, boy, stick to it and you'll come out on top. One of my cars should be back in half an hour. Perhaps then I can offer you a little help. But not before. You don't need it, Lemke, you're strong enough to handle it yourself."

"Thanks." I stared at the receiver in disgust. That about the police car returning in half an hour was a nice touch, but I realized all at once what a hopeless sham it was. I knew I ought to thank him again, so I did. My words produced the usual gruff, confident response:

"You're welcome, Lemke. I must hang up. There's a call coming on the radio."

"Sure, I know. The county sheriff."

"The county sheriff is on the band, Lemke. Goodbye."

The connection clicked dead. I hung up and cried a while.

Finally I worked up enough guts to step outside the phone booth and listen. All around I could hear the comforting sounds of my home town. From one end of Gurleyville to the other, I reminded myself, they depended on me, counted on me to protect them. Didn't I have the gun?

I examined it up one side and down the other. I didn't seem

quite sufficient for the job. I wished suddenly that I'd been inducted into the Army before, so that I might have had a chance to learn about small arms. My bum foot kept me out. As I started up Berry I recalled that I'd been pleased about the rejection by the examiners in—where was it?—Syracuse? Yes. I was to receive a scale boost in salary at the station just at the time I would have been shipped off. Now, however, the salary increase seemed worthless. I had neither the money nor the firearms experience I needed.

Behind a clump of privet on the Potters' front lawn I crouched down, squinting up the road to the station. I could hear the clatter and whirr of an automatic washer through an open cellar window, but only dimly, because my attention was focused on the wink of sunlight off bumper chrome in the parking area outside the station. The Chevy had pulled up. Of its occupants there was no sign. All the laundry had been torn from the transmission tower.

THE defilement of my laundry set me off. The next thing I knew, I was running up the macadam road, my chest hurting from the exertion, breath pumping in and out of my lungs. I held my right hand around the molded stock of the gun, my left

around the trigger grip in front of the ammunition drum. I ran past the Chevy, heedless of danger, kicked open the station door and bolted down the corridor.

Inside Studio B at the far end I saw a pair of scarecrow figures rifling my supply of Nelson's Crackers.

"Turn around and put up your hands or I'll kill you!"

For a moment I'm sure I frightened them. First one turned, then the other. They were emaciated, wearing tattered clothing. The one with white skin could hardly have been more than seventeen or eighteen. The green of his uniform blouse was in shreds. The ends of his ribs jutted beneath gray flesh. His hair was white.

He stared at me with round, terrified eyes, wiping cracker crumbs from the corners of his lips. Then he smiled hesitantly.

"Jesus! I couldn't believe it when I saw the laundry. I'm sorry if we messed it up. We got kind of excited and started pulling it down, waving it around. We haven't seen—"

"Be quiet," I told him. "You've had all the food you're going to get."

He seemed not to understand. He took a shaky step, one bony hand extended.

"Peterson, Joe Peterson. Four-hundred-and-second Tactical Missile Squadron. We were up in

Utica. I been travelling for months, all the way to Ohio and back, and besides him, you're the very first—"

"Shut up." I eyed his companion. "Climb in your car and get out of town. We don't want your kind in Gurleyville."

"But I'm starving! I'm damn near dead from starvation. So is he."

His grimy thumb indicated his companion, the thin little fellow in a soiled brown uniform and cracked boots. He had very shiny black hair slicked back over his head and his slanted eyes moved nervously. His yellow skin gave off a disgusting smell of sweat.

I HOPED they wouldn't guess how rapidly my heart was beating. The white boy scrutinized my gun aimed directly at his chest. I said to him: "I might let you take a box of Nelson's Crackers if you were alone. But consorting with one of them—! What kind of American are you, travelling with a man who invaded—?"

The boy's fists clenched. "Listen! We're both starved and we want food. Don't give me any crappy lectures, not when we got just a couple of months at the most before—"

"Move along!" I snapped, tightening my index finger on the trigger. "My responsibility is looking out for the people of

Gurleyville. I'm their protector. I won't have you coming in here befouling the air. Take one box of the crackers. I can't spare any more. Then be on your way."

"You must have a grocery downtown. Don't you?" He smiled suddenly, nudging his companion. The yellow man smiled back and chattered something in a language I couldn't understand. Both of them began walking toward me. I could tell from their faces that they were completely and hopelessly insane.

The boy spoke insistently: "Well, listen, loony. We'll take everything we damn please from the grocery. When we saw the laundry we thought, here's another one. Three can make out better than two. But I don't think so any more. Oh, man, no, I don't think so."

"Both of you are insane," I said. "Stop where you are or I'll kill you."

He pointed. "With that?"

"Of course."

He was walking again, so near I could smell his foulness. "Loaded, too, huh?"

"Naturally it's loaded. Stand back, you maniacs, or—"

ONE circled to my left, one to my right. I didn't want to kill them but in another minute they'd force my hand. I was Gurleyville's protector. I had no choice.

The boy kept on talking softly: "Pretty fine gun, all right. I'm sure scared. By the way, what make gun is that?"

"I don't want to kill you," I pleaded. "My responsibility—"

"Look." The boy pointed, smiling like a wolf. "It's stencilled in the plastic on the side panel. What's the name of that gun maker again?"

I hadn't noticed before. I looked.

"Mattel."

It was a filthy trick. While I was looking, they jumped me.

They battered me to the floor. I fired a burst, smelled the smoke and felt the gun bucking in my hands, its muzzle spitting sound. But somehow they must have dodged the bullets. They threw me on the floor, those two insane maniacs, and took out their craziness with their fists and their boots until my head ached.

Everything went dark.

When I woke up I discovered they were worse than maniacs.

They'd gone, of course, taking with them every last box of Nelson's Crackers. But that wasn't the worst. I'd angered them enough to turn them into animals. The inside of the station was a shambles.

I must have been unconscious for quite a while because they'd done a thorough job, the vile bastards—broken the recording heads and demolished the li-

brary, demolished every last one of the commercial and sound effects tapes accumulated over the years.

I knelt on the floor of the master control room amid the litter of 3M tape boxes. When I'd finished all the installations, I'd had only a few reels of tape left, and now every last bit was shredded to pieces. I wanted to cry.

Ah, God. Eleven months of work gone in a single morning. Panting and sobbing, I rushed outside and around the back of the station where the insulated cables stretched away down the hill in various directions. I sank to my knees and cried and cried. The savages had maliciously torn the cables from the entrance boxes I'd mounted in hand-hewn holes in the station wall. All the windows in the station had been smashed too. They'd trampled all over my laundry, flung it there on the sere earth. I fondled the ripped-out cables and cried.

**S**OBGING more violently, I ran down the hill toward Berry. I should have heard cows lowing from the farmyard where the rooster crowed at dawn, but I didn't. The automatic washer in the Potters' basement no longer rumbled. No dog barked from behind the poplars on the Johnson property. The rail yards were quiet. The Paradise Cafe juke

was dead, the restaurant's front windows smashed. Several cars at the curb had been looted. The empty aisles of the IGA Superfoods were silent too, all the plate glass sprinkled in shards on the sidewalk.

I ran to Whitelaw's Lake Tap and rang the cash register. The voice came out of the dark:

"Morning, frienderaawwk."

I screamed at the black empty booth: "Sophie, would you like another beer?" I'd said it backwards. "Would you like another beer, Sophie?"

"Not this morning, Lemkaw-warf."

I ran to the booth, threw the beer can and the glass and the white gloves on the floor and examined the little transmitter. Then I threw that on the floor too. Crying, I ran to the corner phone booth and dialled, forgetting to reach for the dime it always returned:

"Gurleyville Police Headquarters, Chief Chesterfield speaking speaking speaking speakkkkkk." The tape snapped and the connection went dead.

**I**'M very worried.

I know I should call the doctor but I don't think he'll answer. All day I've been walking around town, wondering why those two insane men did what they did, why they had to be so impossibly cruel. In ten or fif-

teen minutes the sun will set over the western shore of the lake. It will be time for the greenup.

I hate the greenup. I hate seeing the pale radiance of the buildings and hills and sky and my own fingers, as though someone were shining a green flashlight through my hand.

I thought I was lucky, caught inside the concrete block station when it began. I was left to be the protector. People need me to protect them.

It's greenup.

I can see the maples on the western ridge above the lake glowing. Even the water shines. I'm really very worried. My

lapses of memory are at their worst during the greenup every night.

But it's my responsibility to struggle. I'm the protector. What if the tape is destroyed, the cables cut, the recording heads broken? An engineer can always rebuild if there's time before the last—

I forgot for ten minutes.

But I'm the protector. My name is the key that unlocks the door that hides everything that disappears during the lapses when the little bones in my fingers shine the brightest green.

Just a second. My name is—

*My name is—*

THE END

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# The AIRLORDS of HAN

By PHILIP FRANCIS NOWLAN

Introduction by Sam Moskowitz

OF ALL the stories selected for reprinting by AMAZING STORIES, none have received the acclamation of Armageddon-2419, the first Buck Rogers story published in the April, 1961, 35th Anniversary issue. Readers were amazed by the terse writing, the superb knowledge of military tactics, the brilliant prophecies of rocket guns, walkie talkies, jet planes, infra-red ray sights and many other devices which have become part and parcel of modern warfare.

The Airlords of Han, sequel to Armageddon-2419, is in every meaning of the phrase, a command performance for the readers of AMAZING STORIES. While many other stories may have received greater publicity through the years and other authors achieved more meaningful fame, Philip Francis Nowlan's work has not been unknown to prime movers in the field. At the time of Nowlan's sudden death from a stroke in 1940, John W. Campbell, Jr., who read the "Buck"

Rogers stories when they first appeared and was at that very time scheduling the last story the man was ever to write, said: "The quality of Nowlan's written science-fiction was certainly exceptionally high—even ten years ago, when the magazine science-fiction was only starting, the work Phil Nowlan did was of a grade that would have been acceptable and well rated against the much more highly evolved work of today. He had, then, developed one of the concepts that has only recently been generally recognized and used; the realization that the thought-patterns of the people of the future will necessarily be as different from the everyday thought-matrices of our present as their background must differ from ours."

The Airlords of Han will prove a delight to the readers. Hugo Gernsback when "blurbing" it in 1929 said: "Mr. Nowlan has quite outdone himself. In our humble opinion, the sequel is in many respects better than the original

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**A Classic Reprint from AMAZING STORIES, March, 1929**

Illustrated by FRANK R. PAUL



story." That statement, is, in my opinion, true. This is a marvelous story from many standpoints.

**F**IRST of all from the aspect of the storytellers art, it is told with a directness, precise imagery and discipline of controlled imagination that has relatively limited competition among science fiction authors living or dead. The obvious grasp of military tactics, so strikingly evidenced in the first story, is reaffirmed here.

Here, too, the sound basis of the scientific prophecy has few equals. The war of the future is fought with rockets that sport atomic warheads! No indirection in prophecy. No broad gesture that could be interpreted as the foregoing, but the very terms spelled out for the very purpose we use them today and this is a story printed in 1929, not one appearing in 1944 or 1945, when the events were nearly upon us.

Buttressing the inventions are the sound, military reasons for their use and their limitations. You will find that the United

States initially was devastated after a war with the Bolsheviks. You will stand back aghast as psychoanalysts (called that) practice brainwashing for political and military reasons. Public television for personal communication, like the telephone (recently instituted to a limited degree in Russia) is standard practice. Germ warfare is effectively practiced. Radio controlled rocket powered television scanners send back pictures and words to the operator, not unlike what some of our earth satellites are doing today.

All of this is placed logically in a society whose social system, business structure and mores are carefully integrated with the scientific material.

It was no accident that Buck Rogers became an almost instantaneous success as a comic strip. Behind its creation was one of the most logical, scientifically planned "worlds of if" ever conceived. The re-presentation of these original Buck Rogers stories secures for Philip Francis Nowlan the important place he deserves as a shaper of modern science fiction.

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## CHAPTER I

### The Airlords Besieged

**I**N a previous record of my adventures in the early part of the Second War of Independence

I explained how I, Anthony Rogers, was overcome by radioactive gases in an abandoned mine near Scranton in the year 1927, where I existed in a state of suspended animation for nearly five hun-



dred years; and awakened to find that the America I knew had been crushed under the cruel tyranny of the Airlords of Han, fierce Mongolians, who, as scientists now contend, had in their blood a taint not of this earth, and who with science and resources far in advance of those of a United States, economically prostrate at the end of a long series of wars with a Bolshevik Europe, in the year 2270 A.D., had swept down from the skies in their great airships that rode "repeller rays" as a ball rides the stream of a fountain, and with their terrible "disintegrator rays" had destroyed more than four-fifths of the American race, and driven the other fifth to cover in the vast forests which grew up over the remains of the once mighty civilization of the United States.

I explained the part I played in the fall of the year 2419, when the rugged Americans, with science secretly developed to terrific efficiency in their forest fastness, turned fiercely and assumed the aggressive against a now effete Han population, which for generations had shut itself up in the fifteen great Mongolian cities of America, having abandoned cultivation of the soil and the operation of mines; for these Hans produced all they needed in the way of food, clothing, shelter and machinery

through electrono-synthetic processes.

I explained how I was adopted into the Wyoming Gang, or clan, descendants of the original populations of Wilkes-Barre, Scranton and the Wyoming Valley in Pennsylvania; how quite by accident I stumbled upon a method of destroying Han aircraft by shooting explosive rockets, not directly at the heavily armored ships, but at the repeller ray columns, which automatically drew the rockets upward where they exploded in the generators of the aircraft; how the Wyomings threw the first thrill of terror into the Airlords by bringing an entire squadron crashing to earth; how a handful of us in a rocketship successfully raided the Han city of Nu-Yok; and how by the application of military principles, I remembered from the First World War, I was able to lead the Wyomings to victory over the Sinsings, a Hudson River tribe which had formed a traitorous alliance with the hereditary enemies and oppressors of the White Race in America.

BY the Spring of 2420 A.D., a short six months after these events, the positions of the Yellow and the White Races in America had been reversed. The hunted were now the hunters. The Hans desperately were increasing the defenses of their fifteen

cities, around each of which the American Gangs had drawn a widely deployed line of long-gunners; while nervous air convoys, closely bunched behind their protective screen of disintegrator beams, kept up sporadic and costly systems of transportation between the cities.

During this period our own campaign against the Hans of Nu-Yok was fairly typical of the development of the war throughout the country. Our force was composed of contingents from most of the Gangs of Pennsylvania, Jersey and New England. We encircled the city on a wide radius, our line running roughly from Staten Island to the forested site of the ancient city of Elizabeth, to First and Second Mountains just West of the ruins of Newark, Bloomfield and Montclair, thence Northeast-erly across the Hudson, and down to the Sound. On Long Island our line was pushed forward to the first slopes of the hills.

We had no more than four long-gunners to the square mile in our first line, but each of these was equal to a battery of heavy artillery such as I had known in the First World War. And when their fire was first concentrated on the Han city, they blew its outer walls and roof levels into a chaotic mass of wreckage before the nervous Yellow engineers could turn on

the ring of generators which surrounded the city with a vertical film of disintegrator rays. Our explosive rockets could not penetrate this film, for it disintegrated them instantly and harmlessly, as it did all other material substance with the sole exception of "inertron," that synthetic element developed by the Americans from the sub-electronic and ultronic orders.

THE continuous operation of the disintegrators destroyed the air and maintained a constant vacuum wherever they played, into which the surrounding air continuously rushed, naturally creating atmospheric disturbances after a time, which resulted in a local storm. This, however, ceased after a number of hours, when the flow of air toward the city became steady.

The Hans suffered severely from atmospheric conditions inside their city at first, but later rearranged their disintegrator ring in a system of overlapping films that left diagonal openings, through which the air rushed to them, and through which their ships emerged to scout our positions.

We shot down seven of their cruisers before they realized the folly of floating individually over our invisible line. Their beams traced paths of destruction like scars across the countryside, but

caught less than half a dozen of our gunners all told, for it takes a lot of time to sweep every square foot of a square mile with a beam whose cross section is not more than twenty or twenty-five feet in diameter. Our gunners, completely concealed beneath the foliage of the forest, with weapons which did not reveal their position, as did the flashes and detonation of the twentieth century artillery, hit their repeller rays with comparative ease.

The "drop ships," which the Hans next sent out, were harder to handle. Rising to immense heights behind the city's disintegrator wall, these tiny, projectile-like craft slipped through the rifts in the cylinder of destruction, and then turning off their repeller rays, dropped at terrific speed until their small vanes were sufficient to support them as they volplaned in great circles, shooting back into the city defenses at a lower level.

The great speed of these craft made it almost impossible to register a direct hit against them with rocket guns, and they had no repeller rays at which we might shoot while they were over our lines.

But by the same token they were able to do little damage to us. So great was the speed of a drop ship, that the only way in which it could use a disintegra-

tor ray was from a fixed generator in the nose of the structure, as it dropped in a straight line toward its target. But since they could not sight the widely deployed individual gunners in our line, their scouting was just as ineffective as our attempts were to shoot them down.

FOR more than a month the situation remained a deadlock, with the Hans locked up in their cities, while we mobilized gunners and supplies.

Had our stock of inertron been sufficiently great at this period, we could have ended the war quickly, with aircraft impervious to the "dis" ray. But the production of inertron is a painfully slow process, involving the building up of this weightless element from ultronic vibrations through the sub-electronic, electronic and atomic states into molecular form. Our laboratories had barely begun production on a quantity basis, for we had just learned how to protect them from Han air raids, and it would be many months more before the supply they had just started to manufacture would be finished. In the meantime we had enough for a few aircraft, for jumping belts and a small amount of armor.

We Wyomings possessed one swooper completely sheathed with inertron and counterweight-

ed with ultron. The Altoonas and the Lycomings also had one apiece. But a shielded swooper, while impervious to the "dis" ray, was helpless against squadrons of Han aircraft, for the Hans developed a technique of playing their beams underneath the swooper in such fashion as to suck it down flutteringly into the vacuum so created, until they brought it finally, and more or less violently, to earth.

Ultimately the Hans broke our blockade to a certain extent, when they resumed traffic between their cities in great convoys, protected by squadrons of cruisers in vertical formation, playing a continuous cross-fire of disintegrator beams ahead of them and down on the sides in a most effective screen, so that it was very difficult for us to get a rocket through so the repeller rays.

But we lined the scar paths beneath their air routes for miles at a stretch with concealed gunners, some of whom would sooner or later register hits, and it was seldom that a convoy made the trip between Nu-Yok and Boss-Tan, Bah-Flo, Si-ka-ga or Ah-la-nah without losing several of its ships.

Hans who reached the ground alive were never taken prisoner. Not even the splendid discipline of the Americans could curb the wild hate developed through cen-

turies of dastardly oppression, and the Hans were mercilessly slaughtered, when they did not save us the trouble by committing suicide.

Several times the Hans drove "air wedges" over our lines in this vertical or "cloud bank" formation, ploughing a scar path a mile or more wide through our positions. But at worst, to us, this did not mean the loss of more than a dozen men and girls, and generally their raids cost them one or more ships. They cut paths of destruction across the map, but they could not cover the entire area, and when they had ploughed out over our lines, there was nothing left for them to do but to turn around and plough back to Nu-Yok. Our lines closed up again after each raid, and we continued to take heavy toll from convoys and raiding fleets. Finally they abandoned these tactics.

So at the time of which I speak, the Spring of 2420 A.D., the Americans and the Hans were temporarily at pretty much of a deadlock. But the Hans were as desperate as we were sanguine, for we had time on our side.

It was at this period that we first learned of the Airlords' determination, a very unpopular one with their conscripted populations, to carry the fight to us on the ground. The time had

passed when command of the air meant victory. We had no visible cities nor massed bodies of men for them to destroy, nothing but vast stretches of silent forests and hills, where our forces lurked, invisible from the air.

## CHAPTER II

### The "Ground Ships" Threaten

ONE of our Wyoming girls, on contact guard near Pocono, blundered into a hunting camp of the Bad Bloods, one of the renegade American Gangs, which occupied the Blue Mountain section North of Delaware Water Gap. We had not invited their cooperation in this campaign, for they were under some suspicion of having trafficked with the Hans in past years, but they had offered no objection to our passage through their territory in our advance on Nu-Yok.

Fortunately our contact guard had been able to leap into the upper branches of a tree without being discovered by the Bad Bloods, for their discipline was lax and their guard careless. She overheard enough of the conversation of their Bosses around the camp fire beneath her to indicate the general nature of the Han plans.

After several hours she was able to leap away unobserved through the topmost branches of the trees, and after putting sev-

eral miles between herself and their camp, she ultrophoned a full report to her Contact Boss back in the Wyoming Valley. My own Ultrophone Field Boss picked up the message and brought the graph record of it to me at once.

Her report was likewise picked up by the Bosses of the various Gang units in our line, and we had called a council to discuss our plans by word of mouth.

We were gathered in a sheltered glade on the Eastern slope of First Mountain on a balmy night in May. Far to the East, across the forested slopes of the lowlands, the flat stretches of open meadow and the rocky ridge that once had been Jersey City, the iridescent glow of Nu-Yok's protecting film of annihilation shot upward, gradually fading into a starry sky.

In the faint glow of our ulttronolamps, I made out the great figure and rugged features of Boss Casaman, commander of the Mifflin unit, and the gray uniform of Boss Warn, who led the Sandsnipers of the Barnegat Beaches, and who had swooped over from his headquarters on Sandy Hook. By his side stood Boss Handan of the Winslows, a Gang from Central Jersee. In the group also were the leaders of the Altoonas, the Camerons, the Lycoming, Susquannas, Harshbargs, Hagersduns, Chesters,

Reddings, Délawares, Elmirans, Kiugas, Hudsons and Connedigas.

MOST of them were clad in forest-green uniforms that showed black at night, but each had some distinctive badge or item of uniform or equipment that distinguished his Gang.

Both the Mifflin and Altoona bosses, for instance, wore heavy-looking boots with jointed knees. They came from sections that were not only mountainous, but rocky, where "leaping" involves many a slip and bruised limb, unless some protection of this sort is worn. But these boots were not as heavy as they looked, being counter-balanced somewhat with inertron.

The headgear of the Winslows was quite different from the close-fitting helmet of the Wyomings, being large and bushy looking, for in the Winslow territory there were many stretches of nearly bare land, with occasional scrubby pines, and a Winslow caught in the open, on the approach of a Han airship, would twist himself into a motionless imitation of a scrubby plant, that passed very successfully for the real thing, when viewed from several thousand feet in the air.

The Susquannas had a unit that was equipped with inertron shields, that were of the same

shape as those of the ancient Romans, but much larger, and capable of concealing their bearers from head to foot when they crouched slightly. These shields, of course, were colored forest green, and were irregularly shaded; they were balanced with inertron, so that their effective weight was only a few ounces. They were curious too, in that they had handles for both hands, and two small reservoir rocket-guns built into them as integral parts.

In going into action, the Susquannas crouched slightly, holding the shields before them with both hands, looking through a narrow vision slit, and working both rocket guns. The shields, however, were a great handicap in leaping, and in advancing through heavy forest growth.

The field unit of the Delawares was also heavily armored. It was one of the most efficient bodies of shock troops in our entire line. They carried circular shields, about three feet in diameter, with a vision slit and a small rocket gun. These shields were held at arm's length in the left hand on going into action. In the right hand was carried an ax-gun, an affair not unlike the battle-ax of the Middle Ages. It was about three feet long. The shaft consisted of a rocket gun, with an ax-blade near the muzzle, and a spike at the other end.

It was a terrible weapon. Jointed leg-guards protected the ax-gunner below the rim of his shield, and a hemispherical helmet, the front section of which was of transparent ultron reaching down to the chin, completed his equipment.

THE Susquannas also had a long-gun unit in the field.

One company of my Wyomings I had equipped with a weapon which I designed myself. It was a long-gun which I had adapted for bayonet tactics such as American troops used in the First World War, in the Twentieth Century. It was about the length of the ancient rifle, and was fitted with a short knife bayonet. The stock, however, was replaced by a narrow ax-blade and a spike. It had two hand-guards also. It was fired from the waist position.

In hand-to-hand work one lunged with the bayonet in a vicious, swinging up-thrust, following through with an up-thrust of the ax-blade as one rushed in on one's opponent, and then a down-thrust of the butt-spike, developing into a down-slice of the bayonet, and a final upward jerk of the bayonet at the throat and chin with a shortened grip on the barrel, which had been allowed to slide through the hands at the completion of the down-slice.

I almost regretted that we would not find ourselves opposed to the Delaware ax-men in this campaign, so curious was I to compare the efficiency of the two bodies.

But both the Delawares and my own men were elated at the news that the Hans intended to fight it out on the ground at last, and the prospect that we might in consequence come to close quarters with them.

Many of the Gang Bosses were dubious about our Wyoming policy of providing our fighters with no inertron armor as protection against the disintegrator ray of the Hans. Some of them even questioned the value of all weapons intended for hand to hand fighting.

As Warn, of the Sandsnipers put it: "You should be in a better position than anyone, Rogers, with your memories of the Twentieth Century, to appreciate that between the superdeadliness of the rocket gun and of the disintegrator ray there will never be any opportunity for hand-to-hand work. Long before the opposing forces could come to grips, one or the other will be wiped out."

But I only smiled, for I remembered how much of this same talk there was five centuries ago, and that it was even predicted in 1914 that no war could last more than six months.

THAT there would be hand to hand work before we were through, and in plenty, I was convinced, and so every able-bodied youth I could muster was enrolled in my infantry battalion and spent most of his time in vigorous bayonet practice. And for the same reason I had discarded the idea of armor. I felt it would be clumsy, and questioned its value. True, it was an absolute bar against the disintegrator ray, but of what use would that be if a Han ray found a crevice between overlapping plates, or if the ray was used to annihilate the very earth beneath the wearer's feet?

The only protective equipment that I thought was worth a whoop was a very peculiar device with which a contingent of five hundred Altoonas was supplied. They called it the "umbra-shield." It was a bell-shaped affair of inertron, counterweighted with ultron, about eight feet high. The gunner, who walked inside it, carried it easily with two shoulder straps. There were handles inside too, by which the gunner might more easily balance it when running, or lift it to clear any obstructions on the ground.

In the apex of the affair, above his head, was a small turret, containing an automatic rocket gun. The periscopic gun sight and the controls were on a level with

the operator's eyes. In going into action he could, after taking up his position, simply stoop until the rim of the umbra-shield rested on the ground, or else slip off the shoulder straps, and stand there, quite safe from the disintegrator ray, and work his gun.

But again, I could not see what was to prevent the Hans from slicing underneath it, instead of directly at it, with their rays.

AS I saw it, any American who was unfortunate enough to get in the direct path of a "dis" ray, was almost certain to "go out," unless he was locked up tight in a complete shell of inertron, as for instance, in an inertron swooper. It seemed to me better to concentrate all our efforts on tactics of attack, trusting to our ability to get the Hans before they got us.

I had one other main unit besides my bayonet battalion, a long-gun contingent composed entirely of girls, as were my scout units and most of my auxiliary contingents. These youngsters had been devoting themselves to target practice for months, and had developed a fine technique of range finding and the various other tactics of Twentieth Century massed artillery, to which was added the scientific perfection of the rocket guns and an average mental



alertness that would have put the artilleryman of the First World War to shame.

From the information our contact guard had obtained, it appeared that the Hans had developed a type of "groundship" completely protected by a disintegrator ray "canopy" that was operated from a short mast, and spread down around it as a cone.

These ships were merely adaptations of their airships, and were designed to travel but a few feet above the ground. Their repeller rays were relatively weak; just strong enough to lift them about ten or twelve feet from the surface. Hence they would draw but lightly upon the power broadcast from the city, and great numbers of them could be used. A special ray at the stern propelled them, and an extra-lift ray in the bow enabled them to nose up over ground obstacles. Their most formidable feature was the cone-shaped "canopy" of short range disintegrator ray designed to spread down around them from a circular generator at the tip of a twenty-foot mast amidship. This would annihilate any projectile shot at it, for they naturally could not reach the ship without passing through the cone of rays.

It was instantly obvious that the "ground ships" would prove to be the "tanks" of the twenty-fifth century, and with due al-

lowance for the fact that they were protected with a sheathing of annihilating rays instead of with steel, that they would have about the same handicaps and advantages as tanks, except that since they would float lightly on short repeller rays, they could hardly resort to the destructive crushing tactics of the tanks of the First World War.

AS soon as our first supplies of inertron-sheathed rockets came through, their invulnerability would be at an end, as indeed would be that of the Han cities themselves. But these projectiles were not yet out of the factories.

In the meantime, however, the groundships would be hard to handle. Each of them we understood would be equipped with a thin long-range "dis" ray, mounted in a turret at the base of the mast.

We had no information as to the probable tactics of the Hans in the use of these ships. One sure method of destroying them would be to bury mines in their path, too deep for the penetration of their protecting canopy, which would not, our engineers estimated, cut deeper than about three feet a second. But we couldn't ring Nu-Yok with a continuous mine on a radius of from five to fifteen or twenty miles. Nor could we be certain before-

hand of the direction of their attack.

In the end, after several hours' discussion, we agreed on a flexible defense. Rather than risk many lives, we would withdraw before them, test their effectiveness and familiarize ourselves with the tactics they adopted. If possible, we would send engineers in behind them from the flanks, to lay mines in the probable path of their return, providing their first attack proved to be a raid and not an advance to consolidate new positions.

### CHAPTER III

#### We "Sink" the "Ground Ships"

BOSS Hāndan, of the Winslows, a giant of a man, a two-fisted fighter and a leader of great sagacity, had been selected by the council as our Boss Protm, and having given the scatter signal to the council, he retired to our general headquarters, which we had established on Second Mountain a few miles in the rear of the fighting front in a deep ravine.

There, in quarters cut far below the surface, he would observe every detail of the battle on the wonderful system of view-plates our ultrono engineers had constructed through a series of relays from ultroscope observation posts and individual "camermen."

Two hours before dawn our long distance *scopemen* reported a squadron of "ground ships" leaving the enemy's disintegrator wall, and heading rapidly somewhat to the south of us, toward the site of the ancient city of Newark. The ultrasopes could detect no canopy operation. This in itself was not significant, for they were penetrating hills in their lines of vision, most of them, which of course blurred their pictures to a slight extent. But by now we had a well-equipped electronoscope division, with instruments nearly equal to those of the Hans themselves; and these could detect no evidence of *dis* rays in operation.

Handan appreciated our opportunity instantly, for no sooner had the import of the message on the Bosses' channel become clear than we heard his personal command snapped out over the long-gunners' general channel.

Nine hundred and seventy long-gunners on the south and west sides of the city, concealed in the dark fastnesses of the forests and hillsides, leaped to their guns, switched on their dial lights, and flipped the little lever combinations on their pieces that automatically registered them on the predetermined position of map section HM-243-839, setting their magazines for twenty shots, and pressing their fire buttons.

For what seemed an intermi-

nable instant nothing happened.

Then several miles to the southeast, an entire section of the country literally blew up, in a fiery eruption that shot a mile into the air. The concussion, when it reached me, was terrific. The light was blinding.

And our *scopemen* reported the instant annihilation of the squadron.

WHAT happened, of course, was this; the Hans knew nothing of our ability to see at night through our ultrosopes. Regarding itself as invisible in the darkness, and believing our instruments would pick up its location when its *dis* rays went into operation, the squadron made the fatal error of not turning on its canopies.

To say that consternation overwhelmed the Han high command would be putting it mildly. Despite their use of code and other protective expedients, we picked up enough of their messages to know that the incident badly demoralized them.

Their next attempt was made in daylight. I was aloft in my swooper at the time, hanging motionless about a mile up. Below, the groundships looked like a number of oval lozenges gliding across a map, each surrounded by a circular halo of luminescence that was its *dis* ray canopy.

They had nosed up over the spiny ridge of what once had been Jersey City, and were moving across the meadow lands. There were twenty of them.

Coming to the darker green that marked the forest on the "map" below me, they adopted a wedge formation, and playing their pencil rays ahead of them, they began to beam a path for themselves through the forest. In my ears sounded the ultrophone instructions of my executives to the long-gunners in the forest, and one by one I heard the girls report their rapid retirement with their guns and other inertron-lightened equipment. I located several of them with my scopes, with which I could, of course, focus through the leafy screen above them, and noted with satisfaction the unhurried speed of their movements.

On ploughed the Han wedge, while my girls separated before it and retired to the sides. With a rapidity much greater than that of the ships themselves, the beams penetrated deeper and deeper into the forest, playing continuously in the same direction, literally melting their way through, as a stream of hot water might melt its way through a snow bank.

Then a curious thing happened. One of the ships near one wing of the wedge must have

passed over unusually soft ground, or perhaps some irregularity in the control of its canopy generator caused it to dig deeper into the earth ahead of it, for it gave a sudden downward lurch, and on coming up out of it, swerved a bit to one side, its offense beam slicing full into the ship echeloned to the left ahead of it. That ship, all but a few plates on one side, instantly vanished from sight. But the squadron could not stop. As soon as a ship stood still, its canopy ray playing continuously in one spot, the ground around it was annihilated to a continuously increasing depth. A couple of them tried it, but within a space of seconds, they had dug such deep holes around themselves that they had difficulty in climbing out. Their commanders, however, had the foresight to switch off their offense rays, and so damaged no more of their comrades.

**I** SWITCHED in with my ultraphone on Boss Handan's channel, intending to report my observation, but found that one of our swooper scouts, who, like myself, was hanging above the Hans, was ahead of me. Moreover, he was reporting a suddenly developed idea that resulted in the untimely end of the Hans' groundship threat.

"Those ships can't climb out of deep holes, Boss," he was say-

ing excitedly. "Lay a big barrage against them—no, not on them—in front of them—always in front of them. Pull it back as they come on. But churn h-l out of the ground in front of them! Get the rocketmen to make a penetrative time rocket. Shoot it into the ground in front of them, deep enough to be below their canopy ray, see, and detonate under them as they go over it!"

I heard Handan's roar of exultation as I switched off again to order a barrage from my Wyoming girls. Then I threw my rocket motor to full speed and shot off a mile to one side, and higher, for I knew that soon there would be a boiling eruption below.

No smoke interfered with my view of it, for our atomic explosive was smokeless in its action. A line of blinding, flashing fire appeared in front of the groundship wedge. The ships ploughed with calm determination toward it, but it withdrew before them, not steadily, but jerkily intermittent, so that the ground became a series of gigantic humps, ridges and shell holes. Into these the Han ships wallowed, plunging ponderously yet not daring to stop while their protective canopy rays played, not daring to shut off these active rays.

One overturned. Our observers

reported it. The result was a hail of rocket shells directly on the squadron. These could not penetrate the canopies of the other ships, but the one which had turned turtle was blown to fragments.

The squadron attempted to change its course and dodge the barrier in front of it. But a new barrier of blazing detonations and churned earth appeared on its flanks. In a matter of minutes it was ringed around, thanks to the skill of our fire control.

One by one the wallowing ships plunged into holes from which they could not extricate themselves. One by one their canopy rays were shut off, or the ships somersaulted off the knolls on which they perched, as their canopies melted the ground away from around them. So one by one they were destroyed.

Thus the second ground sortie of the Hans was annihilated.

#### CHAPTER IV

##### Han Electrono-Ray Science

AT this period the Hans of Nu-Yok had only one airship equipped with their new armored repeller ray, their latest defense against our tactics of shooting rockets into the repeller rays and letting the latter hurl them up against the ships. They had developed a new steel alloy of tremendous strength, which

passed their *rep* ray with ease, but was virtually impervious to our most powerful explosives. Their supplies of this alloy were limited, for it could be produced only in the Lo-Tan shops, for it was only there that they could develop the degree of electronic power necessary for its manufacture.

This ship shot out toward our lines just as the last of the groundships turned turtle and was blown to pieces. As it approached, the rockets of our invisible and widely scattered gunners in the forest below began to explode beneath its *rep* ray plates. The explosions caused the great ship to plunge and roll mightily, but otherwise did it no serious harm that I could see, for it was very heavily armored.

Occasionally rockets fired directly at the ship would find their mark and tear gashes in its side and bottom plates, but these hits were few. The ship was high in the air, and a far more difficult target than were its *rep* ray columns. To hit the latter, our gunners had only to gauge their aim vertically. Range could be practically ignored; since the *rep* ray at any point above two-thirds the distance from the earth to the ship would automatically hurl the rocket upward against the *rep* ray plate.

As the ship sped toward us, rocking, plunging and recover-

ing, it began to beam the forest below. It was equipped with a superbeam too, which cut a swathe nearly a hundred feet wide wherever it played.

With visions of many a life snuffed out below me, I surrendered to the impulse to stage a single-handed attack on this ship, feeling quite secure in my floating shell of inertron. I nosed up vertically, and rocketed for a position above the ship. Then as I climbed upward, as yet unobserved in my tiny craft that was scarcely larger than myself, I trained my telutroscope on the Han ship, focussing through to a view of its interior.

Much as I had imbibed of this generation's hatred for the Hans, I was forced to admire them for the completeness and efficiency of this marvelous craft of theirs.

Constantly twirling the controls of my scope to hold the focus, I examined its interior from nose to stern.

IT may be of interest at this point to give the reader a layman's explanation of the electronic or ionic machinery of these ships, and of their general construction, for today the general public knows little of the particular application of the electronic laws which the Hans used, although the practical application of ultronics are well understood.

Back in the Twentieth Century

I had, like literally millions of others, dabbled a bit in "radio" as we called it then; the science of the Hans was simply the superdevelopment of "electricity," "radio," and "broadcasting."

It must be understood that this explanation of mine is not technically accurate, but only what might be termed an illustrative approximation.

The Hans power-stations used to broadcast three distinct "*powers*" simultaneously. Our engineers called them the "*starter*," the "*pullee*" and the "*sub-disintegrator*." The last named had nothing to do with the operation of the ships, but was exclusively the powerizer of the disintegrator generators.

The "*starter*" was not unlike the "radio" broadcasts of the Twentieth Century. It went out at a frequency of about 1,000 kilocycles, had an amperage of approximately zero, but a voltage of two billion. Properly amplified by the use of *inducto-static* batteries (a development of the principle underlying the earth induction compass applied to the control of static) this current energized the "A" *ionomagnetic* coils on the airships, large and sturdy affairs, which operated the *Attractoreflex Receivers*, which in turn "pulled in" the second broadcast power known as the "*pullee*," absorbing it from every direction, literally

exhausting it from surrounding space. The "*pullee*" came in at about a half-billion volts, but in very heavy amperage, proportional to the capacity of the receiver, and on a long wave—at audio frequency in fact. About half of this power reception ultimately actuated the *repeller ray* generators. The other half was used to energize the "*B*" *ionomagnetic* coils, peculiarly wound affairs, whose magnetic fields constituted the only means of insulating and controlling the circuits of the three "powers."

The repeller ray generators, operating on this current, and in conjunction with "twin synchronizers" in the power broadcast plant, developed two rhythmically variable ether-ground circuits of opposite polarity. In the "*X*" circuit, the negative was grounded along an ultraviolet beam from the ship's repeller-ray generator. The positive connection was through the ether to the "*X* synchronizer" in the power plant, whose opposite pole was grounded. The "*Y*" circuit travelled the same course, but in the opposite direction.

The rhythmic variables of these two opposing circuits, as nearly as I can understand it, in heterodyning, created a powerful material "push" from the earth, up along the violet ray beam against the *rep* ray generator and against the two syn-

chronizers at the power plant.

This push developed molecularly from the earth-mass-resultant to the generator; and at the same fractional distance from the rep ray generator to the power plant.

THE force exerted upward against the ship was, of course, highly concentrated, being confined to the path of the ultraviolet beam. Air or any material substance, coming within the indicated section of the beam, was thrown violently upward. The ships actually rode on columns of air thus forcefully up-thrown. Their "home berths" and "stations" were constructed with air pits beneath. When they rose from ordinary ground in open country, there was a vast upheaval of earth beneath their generators at the instant of take-off; this ceased as they got well above ground level.

Equal pressure to the lifting power of the generator was exerted against the synchronizers at the power plant, but this force, not being concentrated directionally along an ultraviolet beam, involved a practical problem only at points relatively close to the synchronizers.

Of course the synchronizers were automatically controlled by the operation of the generators, and only the two were needed for any number of ships draw-

ing power from the station, providing their protection was rugged enough to stand the strain.

Actually, they were isolated in vast spherical steel chambers with thick walls, so that nothing but air pressure would be hurled against them, and this, of course, would be self-neutralizing, coming as it did from all directions.

The "sub-disintegrator power" reached the ships as an ordinary broadcast reception at a negligible amperage, but from one to 500 "quints" (quintillions) voltage, controllable only by the fields of the "B" ionomagnetic coils. It had a wave-length of about ten meters. In the *dis* ray generator, this wave-length was broken up into an almost unbelievably high frequency, and became a directionally controlled wave of an infinitesimal fraction of an inch. This wave-length, actually identical with the diameter of an electron, that is to say, being accurately "tuned" to an electron, disrupted the orbital paths and balanced pulsations of the electrons within the atom, so desynchronizing them as to destroy polarity balance of the atom and causing it to cease to exist as an atom. It was in this way that the ray reduced matter to "nothingness."

This destruction of the atom, and a limited power for its reconstruction under certain con-

ditions, marked the utmost progress of the Han science.

## CHAPTER V

### American Ultronic Science

OUR own engineers, working in shielded laboratories far underground, had established such control over the "de-atomized" electrons as to dissect them in their turn into *sub-electrons*. Moreover, they had carried through the study of this "order" to the point where they finally "dissected" the *sub-electron* into its component *ultrons*, for the fundamental laws underlying these successive orders are not radically dissimilar. And as they progressed, they developed constructive as well as destructive practice. Hence the great triumphs of *ultron* and *inerttron*, our two wonderful synthetic elements, built up from super-balanced and sub-balanced ultronic whorls, through the *sub-electronic* order into the *atomic* and *molecular*.

Hence also, come our relatively simple and beautifully efficient ultraphones and ultrosopes, which in their phonic and visual operation penetrate obstacles of material, electronic and sub-electronic nature without let or hindrance, and with the consumption of but infinitesimal power.

Static disturbance, I should



explain, is negligible in the sub-electronic order, and non-existent in the ultronic.

The pioneer expeditions of our engineers into the ultronic order, I am told, necessitated the use of most elaborate, complicated and delicate apparatus, as well as the expenditure of most costly power, but once established there, all necessary power is developed very simply from tiny batteries composed of thin plates of *metultron* and *katultron*. These two substances, developed synthetically in much the same manner as ordinary ultron, exhibit dual phenomena which for sake of illustration I may compare with certain of the phenomena of radioactivity. As radium is constantly giving off electronic emanations and changing its atomic structure thereby, so *katultron* is constantly giving off *ultronic* emanations, and so changing its *sub-electronic* form, while *metultron*, its complement, is constantly attracting and absorbing *ultronic* values, and so changing its sub-electronic nature in the opposite direction. Thin plates of these two substances, when placed properly in juxtaposition, with insulating plates of *inertron* between, constitute a battery which generates an ultronic current.

AND it is a curious parallel that just as there were many

mysteries connected with the nature of electricity in the Twentieth Century (mysteries which, I might mention, never *have* been solved, notwithstanding our penetration into the "sub-" orders) so there are certain mysteries about the ultronic current. It will flow, for instance, through an ultron wire, from the *katultron* to the *metultron* plate, as electricity will flow through a copper wire. It will short circuit between the two plates if the *inertron* insulation is imperfect. When the insulation is perfect, however, and no ultron metallic circuit is complete, the "current" (apparently the same that would flow through the metallic circuit) is projected into space in an absolutely straight line from the *katultron* plate, and received from space by the *metultron* plate on the same line. This line is the theoretical straight line passing through the mass-center of each plate. The shapes and angles of the plates have nothing to do with it, except that the perpendicular distance of the plate edges from the mass-center line determines thickness of the beam of parallel current-rays.

Thus a simple battery may be used either as a sender or receiver of current. Two batteries adjusted to the same center line become connected in series just as if they were connected by ultron wires.

In actual practice, however, two types of batteries are used; both the *foco* batteries and *broadcast* batteries.

*Foco* batteries are twin batteries, arranged to shoot a positive and a negative beam in the same direction. When these beams are made intermittent at light frequencies (though they are not light waves, nor of the same order as light waves) and are brought together, or focussed, at a given spot, the space in which they cross radiates alternating ultronic current in every direction. This radiated *ultralight* acts like true light so long as the crossing beams vibrate at light frequencies, except in three respects: first, it is not visible to the eye; second, its "color" is exclusively dependent on the frequency of the *foco* beams, which determine the frequency of the alternating radiation. Material surfaces, it would appear, reflect them all in equal value, and the color of the resultant picture depends on the color of the *foco* frequencies. By altering these, a reddish, yellowish or bluish picture may be seen. In actual practice an orthochromatic mixture of frequencies is used to give a black, gray and white picture. The third difference is this: rays pulsating in line toward any ultron object connected with the rear plates of the twin batteries through rectifiers cannot be re-

flected by material objects, for it appears they are subject to a kind of "pull" which draws them straight through material objects, which in a sense are "magnetized" and while in this state offer no resistance.

Ultron, when so connected with battery terminals, glows with true light under the impact of *ultralight*, and if in the form of a lens or set of lenses, may be made to deliver a picture in any telescopic degree desired.

THE essential parts of an ultrroscope, then, are twin batteries with focal control and frequency control; an ultron shield, battery connected and adjustable, to intercept the direct rays from the "*glow-spot*," with an ordinary light-shield between it and the lens; and the lens itself, battery connected and with more or less telescopic elaboration.

To look through a substance at an object, one has only to focus the *glow-spot* beyond the substance but on the near side of the object and slightly above it.

A complete apparatus may be "set" for "penetrative," "distance" and "normal vision."

In the first, which one would use to look through the forest screen from the air, or in examining the interior of a Han ship or any opaque structure, the glow-spot is brought low, at only a tiny angle above the vision

line, and the shield, of course, must be very carefully adjusted.

"Distance" setting would be used, for instance, in surveying a valley beyond a hill or mountain; the *glow-spot* is thrown high to illuminate the entire scene.

In the "normal" setting the *foco* rays are brought together close overhead, and illuminate the scene just as a lamp of super brilliancy would in the same position.

For phonic communication a spherical sending battery is a ball of metultron, surrounded by an insulating shell of inertron, and this in turn by a spherical shell of kaltultron, from which the current radiates in every direction, tuning being accomplished by frequency of intermissions, with audiofrequency modulation. The receiving battery has a core pole of katultron and an outer shell of metultron. The receiving battery, of course, picks up all frequencies, the undesired ones being tuned out in detection.

Tuning, however, is only a convenience for privacy and elimination of interference in ultraphonic communication. It is not involved as a necessity, for untuned currents may be broadcast at voice controlled frequencies, directly and without any carrier wave.

To use plate batteries or sin-

gle center-line batteries for phonic communication would require absolutely accurate directional aligning of sender and receiver, a very great practical difficulty, except when sender and receiver are relatively close and mutually visible.

THIS, however, is the regular system used in the Inter-Gang network for official communication. The senders and receivers used in this system are set only with the greatest difficulty, and by the aid of the finest laboratory apparatus, but once set, they are permanently locked in position at the stations, and barring earthquakes or insecure foundations, need no subsequent adjustment. Accuracy of alignment permits beam paths no thicker than the old lead pencils I used to use in the Twentieth Century.

The non-interference of such communication lines, and the difficulty of cutting in on them from any point except immediately adjacent to the sender or receiver, is strikingly apparent when it is realized that every square inch of an imaginary plane bisecting the unlocated beam would have to be explored with a receiving battery in order to locate the beam itself.

A practical compromise between the spherical or universal broadcast senders and receivers

on the one hand, and the single line batteries on the other, is the *multi-facet battery*. Another, and more practical device particularly for distance work, is the *window-spherical*. It is merely an ordinary spherical battery with a shielding shell with an opening of any desired size, from which a directionally controlled beam may be emitted in different forms, usually that simply of an expanding cone, with an angle of expansion sufficient to cover the desired territory at the desired point of reception.

## CHAPTER VI

### An Unequal Duel

**B**UT to return to my narrative, and my *swooper*, from which I was gazing at the interior of the Han ship.

This ship was not unlike the great dirigibles of the Twentieth Century in shape, except that it had no suspended control car nor gondolas, no propellers, and no rudders, aside from a permanently fixed double-fishtail stabilizer at the rear, and a number of "keels" so arranged as to make the most of the repeller ray air-lift columns.

Its width was probably twice as great as its depth, and its length about twice its width. That is to say, it was about 100 feet from the main keel to the top-deck at their maximum dis-

tance from each other, about 200 feet wide amidship, and between 400 and 500 feet long. It had in addition to the top-deck, three interior decks. In its general curvature the ship was a compromise between a true streamline design and a flattened cylinder.

For a distance of probably 75 to 100 feet back of the nose there were no decks except that formed by the bottom of the hull. But from this point back the decks ran to within a few feet of the stern.

At various spots on the hull curvature in this great "hollow nose" were platforms from which the crews of the *dis ray* generators and the *electronoscope* and *electronophone* devices manipulated their apparatus.

Into this space from the forward end of the center deck, projected the control room. The walls, ceiling and floor of this compartment were simply the surfaces of *viewplates*. There were no windows or other openings.

The operation officers within the control room, so far as their vision was concerned, might have imagined themselves suspended in space, except for the transmitters, levers and other signalling devices around them.

Five officers, I understand, had their posts in the control room; the captain, and the chiefs of *scopes*, *phones*, *dis rays* and *nav-*

igation. Each of these was in continuous interphone communication with his subordinates in other posts throughout the ship. Each *viewplate* had its phone connecting with its "*eye machines*" on the hull, the crews of which would switch from telescopic to normal view at command.

There were, of course, many other *viewplates* at executive posts throughout the ship.

THE Hans followed a peculiar system in the command of their ships. Each ship had a double complement of officers. Active Officers and Base Officers. The former were in actual, active charge of the ship and its apparatus. The latter remained at the ship base, at desks equipped with *viewplates* and phones, in constant communication with their "correspondents," on the ship. They acted continuously as consultants, observers, recorders and advisors during the flight or action. Although not primarily accountable for the operation of the ship, they were senior to, and in a sense responsible for the training and efficiency of the Active Officers.

The *ionomagnetic coils*, which served as the casings, "plates" and insulators of the gigantic condensers, were all located amidship on a center line, reaching clear through from the top

to the bottom of the hull, and reaching from the forward to the rear rep-ray generators; that is, from points about 110 feet from bow and stern. The crew's quarters were arranged on both sides of the coils. To the outside of these, where the several decks touched the hull, were located the various pieces of phone, *scope* and *dis ray* apparatus.

The ship into which I was gazing with my *ultrascopes* (at a telescopic and penetrative setting), carry a crew of perhaps 150 men all told. And except for the strained looks on their evil yellow faces I might have been tempted to believe I was looking on some Twenty-fifth Century pleasure excursion, for there was no running around nor appearance of activity.

The Hans loved their ease, and despite the fact that this was a war ship, every machine and apparatus in it was equipped with a complement of seats and specially designed couches, in which officers and men reclined as they gazed at their *viewplates*, and manipulated the little sets of controls placed convenient to their hands.

THE picture was a comic one to me, and I laughed, wondering how such soft creatures had held the sturdy and virile American race in complete subjection for centuries. But my laugh died

as my mind grasped at the obvious explanation. These Hans were only soft physically. Mentally they were hard, efficient, ruthless, and conscienceless.

Impulsively I nosed my *swooper* down toward the ship and shot toward it at full rocket power. I had acted so swiftly that I had covered nearly half the distance toward the ship before my mind slowly drifted out of the daze of my emotion. This proved my undoing. Their scopeman saw me too quickly, for in heading directly at them I became easily visible, appearing as a steady, expanding point. Looking through their hull, I saw the crew of a *dis ray* generator come suddenly to attention. A second later their beam engulfed me.

For an instant my heart stood still. But the inertron shell of my swooper was impervious to the disintegrator ray. I was out of luck, however, so far as my control over my tiny ship was concerned. I had been hurtling in a direct line toward the ship when the beam found me. Now, when I tried to swerve out of the beam, the swooper responded but sluggishly to the shift I made in the rocket angle. I was, of course, traveling straight down a beam of vacuum. As my craft slowly nosed to the edge of the beam, the air rushing into this vacuum from all sides threw it back in again.

Had I shot my ship across one of these beams at right angles, my momentum would have carried me through with no difficulty. But I had no momentum now except in the line of the beam, and this being a vacuum now, my momentum, under full rocket power, was vastly increased. This realization gave me a second and more acute thrill. Would I be able to check my little craft in time, or would I, helpless as a bullet itself, crash through the shell of the Hans ship to my own destruction?

I shut off my rocketmotor, but noticed no practical diminution of speed.

IT was the fear of the Hans themselves that saved me. Through my ultroscope I saw sudden alarm on their faces, hesitation, a frantic officer in the control room jabbering into his phone. Then shakily the crew flipped their beam off to the side. The jar on my craft was terrific. Its nose caught the rushing tumble of air first, of course, and my tail sailing in a vacuum, swung around with a sickening wrench. My swooper might as well have been a barrel in the tumult of waters at the foot of Niagara. What was worse, the Hans kept me in that condition. Three of their beams were now playing in my direction, but not directly on me except for split seconds.

Their technique was to play their beams around me more than on me, jerking them this way and that, so as to form vacuum pockets into which the air slapped and roared as the beams shifted, tossing me around like a chip.

Desperately I tried to bring my craft under control, to point its nose toward the Han ship and discharge an explosive rocket. Bitterly I cursed my self-confidence, and my impulsive action. An experienced pilot of the present age would have known better than to be caught shooting straight down a *dis* ray beam. He would have kept his ship shooting constantly at some angle to it, so that his momentum would carry him across it if he hit it. Too late I realized that there was more to the business of air fighting, than instinctive skill in guiding a swooper.

At last, when for a fraction of a second my nose pointed toward the Hans, I pressed the button of my rocket gun. I registered a hit, but not an accurate one. My projectile grazed an upper section of the ship's hull. At that it did terrific damage. The explosion battered in a section about fifty feet in diameter, partially destroying the top deck.

At the same instant I had shot my rocket, I had, in a desperate attempt to escape that turmoil of tumbling air, released a catch and dropped all that it was pos-

sible to drop of my ultron ballast. My swooper shot upward, like a bubble streaking for the surface of water.

I was free of the trap in which I had been caught, but unable to take advantage of the confusion which reigned on the Han ship.

I was as helpless to maneuver my ship now, in its up-rush, as when I had been tumbling in the air pockets. Moreover I was badly battered from plunging around in my shell like a pellet in a box, and partially unconscious.

I was miles in the air when I recovered myself. The swooper was steady enough now, but still rising, my instruments told me, and traveling in a general westward direction at full speed. Far below me was a sea of clouds, stretching from horizon to horizon, and through occasional breaks in its surface I could see still other seas of clouds at lower levels.

## CHAPTER VII

### Captured!

CERTAINLY my situation was no less desperate. Unless I could find some method of compensating for my lost ballast, the inverse gravity of my inertron ship would hurl me continuously upward until I shot forth from the last air layer into space. I

thought of jumping, and floating down on my inertron belt, but I was already too high for this. The air was too rarefied to permit breathing outside, though my little air compressors were automatically maintaining the proper density within the shell. If I could compress a sufficiently large quantity of air inside the craft, I would add to its weight. But there seemed little chance that I would myself be able to withstand sufficient compression.

I thought of releasing my inertron belt, but doubted whether this would be enough. Besides I might need the belt badly if I did find some method of bringing the little ship down, and it came too fast.

At last a plan came into my half-numbed brain that had some promise of success, though it was desperate enough. Cutting one of the hose pipes on my air compressor, and grasping it between my lips, I set to work to saw off the heads of the rivets that held the entire nose section of the swooper (inertron plates had to be grooved and riveted together, since the substance was impervious to heat and could not be welded). Desperately I sawed, hammered and chiseled, until at last with a wrench and a snap, the plate broke away.

The released nose of the ship shot upward. The rest began to drop with me. How fast I dropped

I do not know, for my instruments went with the nose. Half fainting, I grimly clenched the rubber hose between my teeth, while the little compressor "carried on" nobly, despite the wrecked condition of the ship, giving me just enough air to keep my lungs from collapsing.

At last I shot through a cloud layer, and a long time afterward, it seemed, another. From the way in which they flashed up to meet me and to appear away above me, I must have been dropping like a stone.

At last I tried the rocket motor, very gently, to check my fall. The swooper was, of course, dropping tail first, and I had to be careful lest it turn over with a sharp blast from the motor, and dump me out.

Passing through the third layer of clouds I saw the earth beneath me. Then I jumped, pulling myself up through the jagged opening, and leaping upward while the remains of my ship shot away below me.

On approaching the ground I opened my chute-cape, to further check my fall, and landed lightly, with no further mishap. Whereupon I promptly threw myself down and slept, so exhausted was I with my experience.

It was not until the next morning that I awoke and gazed about me. I had come down in



mountainous country. My intention was to get my bearing by tuning in headquarters with my ultraphone. But to my dismay I found the little battery disks had been torn from the earflaps of my helmet, though my chest-disk transmitter was still in place, and so far as I could see, in working order. I could report my experience, but could receive no reply.

I spent a half hour repeating my story and explanation on the headquarters channel, then once more surveyed my surroundings, trying to determine in which direction I had better leap. Then there came a stab of pain on the top of my head, and I dropped unconscious.

I regained consciousness to find myself, much to my surprise, a prisoner in the hands of a foot detachment of some thirty Hans. My surprise was a double one; first that they had not killed me instantly; second, that a detachment of them should be roaming this wild country afoot, obviously far from any of their cities, and with no ship hanging in the sky above them.

AS I sat up, their officer grunted with satisfaction and growled a guttural command. I was seized and pulled roughly to my feet by four soldiers, and hustled along with the party into a wooded ravine, through

which we climbed sharply upward. I surmised, correctly as it turned out, that some projectile had grazed my head, and I was in such shape that if it had not been for the fact that my inerton belt bore most of my weight, they would have had to carry me. But as it was I made out well, and at the end of an hour's climb was beginning to feel like myself again, though the Han soldiers around me were puffing and drooping as men will, no matter how healthy, when they are totally unaccustomed to physical effort.

At length the party halted for a rest. I observed them curiously. Except for a few brief exciting moments at the time of our air raid on the intelligence office in Nu-Yok, I had seen no living specimens of this yellow race at close quarters.

They looked little like the Mongolians of the Twentieth Century, except for their slant eyes and round heads. The characteristic of the high cheek bones appeared to have been bred out of them, as were those of the relatively short legs and the muddy yellow skin. To call them yellow was more figurative than literal. Their skins were whiter than those of our own weather-tanned forest men. Nevertheless, their pigmentation was peculiar, and what there was of it looked more like a pale orange tint than

the ruddiness of the Caucasian. They were well formed, but rather undersized and soft looking, small muscled and smooth-skinned, like young girls. Their features were finely chiseled, eyes beady, and nose slightly aquiline.

They were uniformed, not in close-fitting green or other shades of protective coloring, such as the unobtrusive gray of the Jersey Beaches or the leadened russet of the autumn uniforms of our people. Instead they wore loose fitting jackets of some silky material, and loose knee pants. This particular command had been equipped with form moulded boots of some soft material that reached above the knee under their pants. They wore circular hats with small crowns and wide rims. Their loose jackets were belted at the waist, and they carried for weapons each man a knife, a short double-edged sword and what I took to be a form of magazine rocket gun. It was a rather bulky affair, short barrelled, and with a pistol grip. It was obviously intended to be fired either from the waist position or from some sort of support, like the old machine guns. It looked, in fact, like a rather small edition of the Twentieth Century arm.

And have I mentioned the color of their uniforms? Their circular hats and pants were a

bright yellow; their coats a flaming scarlet. What targets they were!

I must have chuckled audibly at the thought, for their commander who was seated on a folding stool one of his men had placed for him, glanced in my direction, and, at his arrogant gesture of command, I was prodded to my feet, and with my hands still bound, as they had been from the moment I recovered consciousness, I was dragged before him.

THEN I knew what it was about these Hans that kept me in a turmoil of irritation. It was their sardonic, mocking, cruel smiles; smiles which left their stamp on their faces, even in repose. Now the commander was smiling tauntingly at me. When he spoke, it was in my own language.

"So!" he sneered, "You beasts have learned to laugh. You have gotten out of control in the last year or so. But that shall be remedied. In the meantime, a simple little surgical operation would make your smile a permanent one, reaching from ear to ear. But there, my orders are to deliver you and your equipment, all we have of it, intact. The Heaven Born has had a whim."

"And who," I asked, "is this Heaven Born?"

"San-Lan," he replied, "misbe-

gotten spawn of the late High Preistess Nlui-Mok, and now Most Glorious Air Lord of All the Hans." He rolled out these titles with a bow of exaggerated respect toward the West, and in a tone of mockery. Those of his men who were near enough to hear, snickered and giggled.

I was to learn that this amazing attitude of his was typical rather than exceptional. Strange as it may seem, no Han rendered any respect to another, nor expected it in return; that is, not genuine respect. Their discipline was rigid and cold-bloodedly heartless. The most elaborate courtesies were demanded and accorded among equals and from inferiors to superiors, but such was the intelligence and moral degradation of this remarkable race, that every one of them recognized these courtesies for what they were; they must of necessity have been hollow mockeries. They took pleasure in forcing one another to go through with them, each trying to outdo the other in cynical, sardonic thrusts, clothed in the most meticulously ceremonious courtesy. As a matter of fact, my captor, by this crude reference to the origin of his ruler, was merely proving himself a crude fellow, guilty of a vulgarity rather than of a treasonable or disrespectful remark. An officer of higher rank and better breeding, would have

managed a clever innuendo, less direct, but equally plain.

I was about to ask him what part of the country we were in and where I was to be taken, when one of his men came running to him with a little portable electronophone, which he placed before him, with much bowing and scraping.

He conversed through this for a while, and then condescended to give me the information that a ship would soon be above us, and that I was to be transferred to it. In telling me this, he managed to convey, with crude attempts at mock-courtesy, that he and his men would feel relieved to be rid of me as a menace to health and sanitation, and would take exquisite joy in inflicting me upon the crew of the ship.

## CHAPTER VIII

### Hypnotic Torture

SOME twenty minutes later the ship arrived. It settled down slowly into the ravine on its repeller rays until it was but a few feet above the tree tops. There it was stopped, and floated steadily, while a little cage was let down on a wire. Into this I was hustled and locked, whereupon the cage rose swiftly again to a hole in the bottom of the hull, into which it fitted snugly, and I stepped into the interior of a

craft not unlike the one with which I had had my fateful encounter, the cage being unlocked.

The cabin in which I was confined was not an outside compartment, but was equipped with a number of viewplates.

The ship rose to a great height, and headed westward at such speed that the hum of the air past its smooth plates rose to a shrill, almost inaudible moan. After a lapse of some hours we came in sight of an impressive mountain range, which I correctly guessed to be the Rockies. Swerving slightly, we headed down toward one of the topmost pinnacles of the range, and there unfolded in one of the viewplates in my cabin a glorious view of Lo-Tan, the Magnificent, a fairy city of glistening glass spires and iridescent colors, piled up on sheer walls of brilliant blue, on the very tip of this peak.

Nor was there any sheen of shimmering disintegrator rays surrounding it, to interfere with the sparkling sight. So far-flung were the defenses of Lo Tan, I found, that it was considered impossible for an American rocket gunner to get within effective range, and so numerous were the *dis* ray batteries on the mountain peaks and in the ravines, in this encircling line of defenses, drawn on a radius of no less than 100 miles, that even the largest

craft, in the opinion of the Hans, could easily be brought to earth through air-pocketing tactics. And this, I was the more ready to believe after my own recent experience.

I SPENT two months as a prisoner in Lo-Tan. I can honestly say that during that entire time every attention was paid to my physical comfort. Luxuries were showered upon me. But I was almost continuously subjected to some form of mental torture or moral assault. Most elaborately staged attempts at seduction were made upon me with drugs, with women. Hypnotism was resorted to. Viewplates were faked to picture to me the complete rout of American forces all over the continent. With incredible patience, and laboring under great handicaps, in view of the vigor of the American offensive, the Han intelligence department dug up the fact that somewhere in the forces surrounding Nu-Yok, I had left behind me Wilma, my bride of less than a year. In some manner, I will never tell how, they discovered some likeness of her, and faked an electronoscopic picture of her in the hands of torturers in Nu-Yok, in which she was shown holding out her arms piteously toward me, as though begging me to save her by surrender.

Surrender of what? Strangely

enough, they never indicated that to me directly, and to this day I do not know precisely what they expected or hoped to get out of me. I surmise that it was information regarding the American sciences.

There was, however, something about the picture of Wilma in the hands of the torturers that did not seem real to me, and my mind still resisted. I remember gazing with staring eyes at that picture, the sweat pouring down my face, searching eagerly for some visible evidence of fraud and being unable to find it. It was the identical likeness of Wilma. Perhaps had my love for her been less great, I would have succumbed. But all the while I knew subconsciously that this was not Wilma. Product of the utmost of nobility in this modern virile, rugged American race, she would have died under even worse torture than these vicious Han scientists knew how to inflict, before she would have pleaded with me this way to betray my race and her honor.

But these were things that not even the most skilled of the Han hypnotists and psychoanalysts could drag from me. Their intelligence division also failed to pick up the fact that I was myself the product of the Twentieth Century and not the Twenty-fifth. Had they done so, it might have made a difference. I have no

doubt that some of their most subtle mental assaults missed fire because of my own Twentieth Century "denseness." Their hypnotists inflicted many horrifying nightmares on me, and made me do and say many things that I would not have done in my right senses. But even in the Twentieth Century we had learned that hypnotism cannot make a person violate his fundamental concepts of morality against his will, and steadfastly I steeled my will against them.

I HAVE since thought that I was greatly aided by my newness to this age. I have never, as a matter of fact, become entirely attuned to it. And even today I confess to a longing wish that man might travel backward as well as forward in time. Now that my Wilma has been at rest these many years, I wish that I might go back to the year 1927, and take up my old life where I left it off, in the abandoned mine near Scranton.

And at the period of which I speak, I was less attuned than now to the modern world. Real as my life was, and my love for my wife, there was much about it all that was like a dream, and in the midst of my tortures by the Hans, this complex—this habit of many months—helped me to tell myself that this, too, was all a dream, that I must not suc-

cumb, for I would wake up in a moment.

And so they failed.

More than that, I think I won something nearer to genuine respect from those around me than any other Hans of that generation accorded to anybody.

Among these was San-Lan himself, the ruler. In the end it was he who ordered the cessation of these tortures, and quite frankly admitted to me his conviction that they had been futile and that I was in many senses a super-man. Instead of having me executed, he continued to shower luxuries and attentions on me, and frequently commanded my attendance upon him.

Another was his favorite concubine, Ngo-Lan, a creature of the most alluring beauty; young, graceful and most delicately seductive, whose skill in the arts and sciences put many of their doctors to shame. This creature, his most prized possession, San-Lan with the utmost moral callousness ordered to seduce me, urging her to apply without stint and to its fullest extent, her knowledge of evil arts. Had I not seen the naked horror of her soul, that she let creep into her eyes for just one unguarded instant, and had it not been for my conviction of Wilma's faith in me, I do not know what—but suffice it to say that I resisted this assault also.

Had San-Lan only known it, he might have had a better chance of breaking down my resistance through another bit of femininity in his household, the little nine-year-old Princess Lu-Yan, his daughter.

I THINK San-Lan held something of real affection for this sprightly little mite, who in spite of the sickening knowledge of rottenness she had already acquired at this early age, was the nearest thing to innocence I found in Lo-Tan. But he did not realize this, and could not; for even the most natural and fundamental affection of the human race, that of parents for their offspring, had been so degraded and suppressed in this vicious Han civilization as to be unrecognizable. Naturally San-Lan could not understand the nature of my pity for this poor child, nor the fact that it might have proved a weak spot in my armor. But had he done so, I truly believe he would have been ready to inflict degradation, torture and even death upon her, to make me surrender the information he wanted.

Yet this man, perverted product of a morally degraded race, had about him something of true dignity; something of sincerity, in a warped, twisted way. There were times when he seemed to sense vaguely, gropingly, won-

deringly, that he might have a soul.

The Han philosophy for centuries had not admitted the existence of souls. Its conception embraced nothing but electrons, protons and molecules, and still was struggling desperately for some shred of evidence that thoughts, will power and consciousness of self were nothing but chemical reactions. However, it had gotten no further than the negative knowledge we had in the Twentieth Century, that a sick body dulls consciousness of the material world, and that knowledge, which all mankind has had from the beginning of time, that a dead body means a departed consciousness. They had succeeded in producing, by synthesis, what appeared to be living tissues, and even animals of moderately complex structure and rudimentary brains, but they could not give these creatures the full complement of life's characteristics, nor raise the brains to more than mechanical control of muscular tissues.

It was my own opinion that they never could succeed in doing so. This opinion impressed San-Lan greatly. I had expected him to snort his disgust, as the extreme school of evolutionists would have done in the Twentieth Century. But the idea was as new to him and the scientists of his court as Darwinism was to

the late Nineteenth and Early Twentieth Centuries. So it was received with much respect. Painfully and with enforced mental readjustments, they began a philosophical search for excuses and justifications for the idea.

ALL of this amused me greatly, for of course neither the newness nor the orthodoxy of a hypothesis will make it true if it is not true, nor untrue if it is true. Nor could the luck or will-power, with which I had resisted their hypnotists and psychoanalysts, make what might or might not be a universal fact one whit more or less of a fact than it really was. But the prestige I had gained among them, and the novelty of my expressed opinion carried much weight with them.

Yet, did not even brilliant scientists frequently exhibit the same lack of logic back in the Twentieth Century? Did not the historians, the philosophers of ancient Greece and Rome show themselves to be the same shrewd observers as those of succeeding centuries, the same masters of the logical and slaves of the illogical?

After all, I reflected, man makes little progress within himself. Through succeeding generations he piles up those resources which he possesses out-

side of himself, the tools of his hands, and the warehouses of knowledge for his brain, whether they be parchment manuscripts, printed book, or electronorecographs. For the rest he is born to-day, as in ancient Greece, with a blank brain, and struggles through to his grave, with a more or less beclouded understanding, and with distinct limitations to what we used to call his "think tank."

THIS particular reflection of mine proved unpopular with them, for it stabbed their vanity, and neither my prestige nor the novelty of the idea was sufficient salve. These Hans for centuries had believed and taught their children that they were a super-race, a race of destiny. Destined to Whom, for What, was not so clear to them; but nevertheless destined to "elevate" humanity to some sort of super-plane. Yet through these same centuries they had been busily engaged in the extermination of "weaklings," whom, by their very persecutions, they had turned into "super men," now rising in mighty wrath to destroy them; and in reducing themselves to the depths of softening vice and flabby moral fiber. Is it strange that they looked at me in amazed wonder when I laughed outright in the midst of some of their most serious speculations?

MY position among the Hans, in this period, was a peculiar one. I was at once a closely guarded prisoner and an honored guest. San-Lan told me frankly that I would remain the latter only so long as I remained an object of serious study or mental diversion to himself or his court. I made bold to ask him what would be done with me when I ceased to be such.

"Naturally," he said, "you will be eliminated. What else? It takes the services of fifteen men altogether, to guard you; and men, you understand, cannot be produced and developed in less than eighteen years." He meditated frowningly for a moment. "That, by the way, is something I must take up with the Birth and Educational Bureau. They must develop some method of speeding growth, even at the cost of mental development. With your wild forest men getting out of hand this way, we are going to need greater resources of population, and need them badly.

"But," he continued more lightly, "there seems to be no need for you to disturb yourself over the prospect at present. It is true you have been able to resist our psychoanalysts and hypnotists, and so have no value to us from the viewpoint of military



information, but as a philosopher, you have proved interesting indeed."

He broke off to give his attention to a gorgeously uniformed official who suddenly appeared on the large viewplate that formed one wall of the apartment. So perfectly did this mechanism operate, that the man might have been in the room with us. He made a low obeisance, then rose to his full height and looked at his ruler with malicious amusement.

"Heaven-Born," he said, "I have the exquisite pain of reporting bad news."

San-Lan gave him a scathing look. "It will be less unpleasant if I am not distracted by the sight of you while you report."

At this the man disappeared, and the viewplate once more presented its normal picture of the mountains North of Lo-Tan; but the voice continued:

"Heaven-Born, the Nu-Yok fleet has been destroyed, the city is in ruins, and the newly formed ground brigades, reduced to 10,000 men, have taken refuge in the hills of Ron-Dak (the Adirondacks) where they are being pressed hard by the tribesmen, who have surrounded them."

**F**OR an instant San-Lan sat as though paralyzed. Then he leaped to his feet, facing the viewplate.

"Let me see you!" he snarled. Instantly the mountain view disappeared and the Intelligence Officer appeared again, this time looking a little frightened.

"Where is Lui-Lok?" he shouted. "Cut him in on my North plate. The commander who loses his city dies by torture. Cut him in. Cut him in!"

"Heaven-Born, Lui-Lok committed suicide. He leaped into a ray, when the rockets of the tribesmen began to penetrate the ray-wall. Lip-Hung is in command of the survivors. We have just had a message from him. We could not understand all of it. Reception was very weak because he is operating with emergency apparatus on Bah-Flo power. The Nu-Yok power broadcast plant has been blown up. Lip-Hung begs for a rescue fleet."

San-Lan, his expression momentarily becoming more vicious, now was striding up and down the room, while the poor wretch in the viewplate, thoroughly scared at last, stood trembling.

"What!" shrieked the tyrant. "He begs a rescue. A rescue of what? Of 10,000 beaten men and nothing better than makeshift apparatus? No fleet? No city? I give him and his 10,000 to the tribesmen! They are of no use to us now! Get out! Vanish! No, wait! Have any of the beasts'

rockets penetrated the ray-walls of other cities?"

"No, Heaven-Born, no. It is only at Nu-Yok that the tribesmen used rockets sheathed in the same mysterious substance they use on their little aircraft and which cannot be disintegrated by the ray." (He meant inertron, of course.)

San-Lan waved his hand in dismissal. The officer dissolved from view, and the mountains once more appeared, as though the whole side of the room were of glass.

More slowly he paced back and forth. He was the caged tiger now, his face seamed with hate and the desperation of foreshadowed doom.

"Driven out into the hills," he muttered to himself. "Not more than 10,000 of them left. Hunted like beasts—and by the very beasts we ourselves have hunted for centuries. Cursed be our ancestors for letting a single one of the spawn live!" He shook his clenched hands above his head. Then, suddenly remembering me, he turned and glared.

"Forest man, what have you to say?" he demanded.

Thus confronted, there stole over me that same detached feeling that possessed me the day I had been made Boss of the Wyomings.

"It is the end of the Air Lords of Han," I said quietly. "For

five centuries' command of the air has meant victory. But this is so no longer. For more than three centuries your great, gleaming cities have been impregnable in all their arrogant visibility. But that day is done also. Victory returns once more to the ground, to men invisible in the vast expanse of the forest which covers the ruins of the civilization destroyed by your ancestors. Ye have sown destruction. Ye shall reap it!

"Your ancestors thought they had made mere beasts of the American race. Physically you did reduce them to the state of beasts. But men do have souls, San-Lan, and in their souls the Americans still cherished the spark of manhood, of honor, of independence. While the Hans have degenerated into a race of sleek, pampered beasts themselves, they have unwittingly bred a race of super-men out of those they sought to make animals. You have bred your own destruction. Your cities shall be blasted from their foundations. Your air fleets shall be brought crashing to earth. You have your choice of dying in the wreckage, or of fleeing to the forests, there to be hunted down and killed as you have sought to destroy us!"

And the ruler of all the Hans shrank back from my outstretched finger as though it had been in truth the finger of doom.

But only for a moment. Suddenly he snarled and crouched as though to spring at me with his bare hands. By a mighty convulsion of the will he regained control of himself, however, and assumed a manner of quiet dignity. He even smiled—a slow, crooked smile.

"No," he said, answering his own thought. "I will not have you killed now. You shall live on, my honored guest, to see with your own eyes how we shall exterminate your animal-brethren in their forests. With your own ears you shall hear their dying shrieks. The cold science of Han is superior to your spurious knowledge. We have been careless. To our cost we have let you develop brains of a sort. But we are still superior. We shall go down into the forests and meet you. We shall beat you in your own element. When you have seen and heard this happen, my Council shall devise for you a death by scientific torture, such as no man in the history of the world has been honored with."

**I** MUST disgress here a bit from my own personal adventures to explain briefly how the fall of Nu-Yok came about, as I learned it afterward.

Upon my capture by the Hans, my wife, Wilma, courageously had assumed command of my Gang, the Wyomings.

Boss Handan, of the Winslows, who was directing the American forces investing Nu-Yok, contented himself for several weeks with maintaining our lines, while waiting for the completion of the first supply of inertron-jacketed rockets. At last they arrived with a limited quantity of very high-powered atomic shells, a trifle over a hundred of them to be exact. But this number, it was estimated, would be enough to reduce the city to ruins. The rockets were distributed, and the day for the final bombardment was set.

The Hans, however, upset Handan's plans by launching a ground expedition up the west bank of the Hudson. Under cover of an air raid to the southwest, in which the bulk of their ships took part, this ground expedition shot northward in low-flying ships.

The raiding air fleet ploughed deep into our lines in their famous "cloud-bank" formation, with down-playing disintegrator rays so concentrated as to form a virtual curtain of destruction. It seared a scarpath a mile and a half wide fifteen miles into our territory.

Everyone of our rocket gunners caught in this section was annihilated. Altogether we lost several hundred men and girls.

Gunners to each side of the raiding ships kept up a contin-

uous fire on them. Most of the rockets were disintegrated, for Handan would not permit the use of the inertron rockets against the ships. But now and then one found its way through the playing beams, hit a repeller ray and was hurled up against a Han ship, bringing it crashing down.

The orders that Handan barked into his ultrophone were, of course, heard by every long-gunner in the ring of American forces around the city, and nearly all of them turned their fire on the Hân airfleet, with the exception of those equipped with the inertron rockets.

These latter held to the original target and promptly cut loose on the city with a shower of destruction which the disintegrator-ray walls could not stop. The results produced awe even in our own ranks.

WHERE an instant before had stood the high-flung masses and towers of Nu-Yok, gleaming red, blue and gold in the brilliant sunlight, and shimmering through the iridescence of the ray "wall," there was a seething turmoil of gigantic explosions.

Surging billows of debris were hurled skyward on gigantic pulsations of blinding light, to the detonations that shook men from their feet in many sections of the American line seven and eight miles away.

As I have said, there were only some hundred of the inertron rockets among the Americans, long and slender, to fit the ordinary guns, but the atomic laboratories hidden beneath the forests, had outdone themselves in their construction. Their release of atomic force was nearly 100 per cent, and each one of them was equal to many hundred tons of trinitrotoluol, which I had known in the First World War, five hundred years before, as "T.N.T."

It was all over in a few seconds. Nu-Yok had ceased to exist, and the waters of the bay and the rivers were pouring into the vast hole where a moment before had been the rocky strata beneath lower Manhattan.

Naturally, with the destruction of the city's power-broadcasting plant the Han air fleet had plunged to earth.

But the ships of the ground expedition up the river, hugging the tree tops closely, had run the gauntlet of the American long-gunners who were busily shooting at the other Han fleet, high in the air to the southwest, and about half of them had landed before their ships were robbed of their power. The other half crashed, taking some 10,000 or 12,000 Han troops to destruction with them. But from those which had landed safely, emerged the 10,000 who now were the sole sur-

vivors of the city, and who took refuge in wooded fastnesses of the Adirondacks.

THE Americans with their immensely greater mobility, due to their jumping belts and their familiarity with the forest, had them ringed in within twenty-four hours.

But owing to the speed of the maneuvers, the lines were not as tightly drawn as they might have been, and there was considerable scattering of both American and Han units. The Hans could make only the weakest short-range use of their newly developed disintegrator-ray field units, since they had only distant sources of power-broadcast on which to draw. On the other hand, the Americans could use their explosive rockets only sparingly for fear of hitting one another.

So the battle was finished in a series of desperate hand to hand encounters in the ravines and mountain slopes of the district.

The Mifflins and Altoonas, themselves from rocky, mountainous sections, gave a splendid account of themselves in this fighting, leaping to the craggy slopes above the Hans, and driving them down into the ravines, where they could safely concentrate on them the fire of depressed rocket guns.

The Susquannas, with their

great inertron shields, which served them well against the weak rays of the Hans, pressed forward irresistibly every time they made a contact with a Han unit, their short-range rocket guns sending a hail of explosive destruction before them.

But the Delawares, with their smaller shields, inertron leg-guards and helmets, and their ax-guns, made faster work of it. They would rush the Hans, shooting from their shields as they closed in, and finish the business with their ax-blades and the small rocket guns that formed the handles of their axes.

It was my own unit of Wyomings, equipped with bayonet guns not unlike the rifles of the First World War, that took the most terrible toll from the Hans.

They advanced at the double, laying a continuous barrage before them as they ran, closing with the enemy in great leaps, cutting, thrusting and slicing with those terrible double-ended weapons in a vicious efficiency against which the Hans with their swords, knives and spears were utterly helpless.

And so my prediction that the war would develop hand-to-hand fighting was verified at the outset.

None of the details of this battle of the Ron Daks were ever known in Lo-Tan. Not more than the barest outlines of the de-

struction of the survivors of Nu-Yok were ever received by San-Lan and his Council. And of course, at that time I knew no more about it than they did.

## CHAPTER X

### *Life in Lo-Tan, the Magnificent*

SAN-LAN's attitude toward me underwent a change. He did not seek my company as he had done before, and so those long discussions and mental duels in which we pitted our philosophies against each other came to an end. I was, I suspected, an unpleasant reminder to him of things he would rather forget, and my presence was an omen of impending doom. That he did not order my execution forthwith was due, I believe to a sort of fascination in me, as the personification of this (to him) strange and mysterious race of super-men who had so magically developed overnight from "beasts" of the forest.

But though I saw little of him after this, I remained a member of his household, if one may speak of a "household" where there is no semblance of house.

The imperial apartments were located at the very summit of the Imperial Tower, the topmost pinnacle of the city, itself clinging to the sides and peak of the highest mountain in that section of the Rockies. There were days

when the city seemed to be built on a rugged island in the midst of a sea of fleecy whiteness, for frequently the cloud level was below the peak. And on such days the only visual communications with the world below was through the viewplates which formed nearly all the interior walls of the thousands of apartments (for the city was, in fact, one vast building) and upon which the tenants could tune in almost any views they wished from an elaborate system of public television and projectoscope broadcasts.

Every Han city had many public-view broadcasting stations, operating on tuning ranges which did not interfere with other communication systems. For slight additional fees a citizen in Lo-Tan might, if he felt so inclined, "visit" the seashore, or the lakes or the forests of any part of the country, for when such scene was thrown on the walls of an apartment, the effect was precisely the same as if one were gazing through a vast window at the scene itself.

It was possible too, for a slightly higher fee, to make a mutual connection between apartments in the same or different cities, so that a family in Lo-Tan, for instance, might "visit" friends in Fis-Ko (San Francisco) taking their apartment, so to speak, along with them; being to

all intents and purposes separated from their "hosts" only by a big glass wall which interfered neither with vision nor conversation.

These public view and visitation projectoscopes explain that utter depth of laziness into which the Hans had been dragged by their civilization. There was no incentive for anyone to leave his apartment unless he was in the military or air service, or a member of one of the repair services which from time to time had to scoot through the corridors and shafts of the city, somewhat like the ancient fire departments, to make some emergency repair to the machinery of the city or its electrical devices.

WHY should he leave his house? Food, wonderful synthetic concoctions of any desired flavor and consistency (and for additional fee conforming to the individual's dietary prescription) came to him through a shaft, from which his tray slid automatically on to a convenient shelf or table.

At will he could tune in a theatrical performance of talking pictures. He could visit and talk with his friends. He breathed the freshest of filtered air right in his own apartment, at any temperature he desired, fragrant with the scent of flowers, the aromatic smell of the pine forests

or the salt tang of the sea, as he might prefer. He could "visit" his friends at will, and though his apartment actually might be buried many thousand feet from the outside wall of the city, it was none the less an "outside" one, by virtue of its viewplate walls. There was even a tube system, with trunk, branch and local lines and an automagnetic switching system, by which articles within certain size limits could be despatched from any apartment to any other one in the city.

The women actually moved about through the city more than the men, for they had no fixed duties. No work was required of them, and though nominally free, their dependence upon the government pension for their necessities and on their "husbands" (of the moment) for their luxuries, reduced them virtually to the condition of slaves.

Each had her own apartment in the Lower City, with but a single small viewplate, very limited "visitation" facilities, and a minimum credit for food and clothing. This apartment was assigned to her on graduation from the State School, in which she had been placed as an infant, and it remained hers so long as she lived, regardless of whether she occupied it or not. At the conclusion of her various "marriages" she would return there, pending her endeavors to make a new

match. Naturally, as her years increased, her returns became more frequent and her stay of longer duration, until finally, abandoning hope of making another match, she finished out her days there, usually in drunkenness and whatever other forms of cheap dissipation she could afford on her dole, starving herself.

Men also received the same State pension, sufficient for the necessities but not for the luxuries of life. They got it only as an old-age pension, and on application.

WHEN boys graduated from the State School they generally were "adopted" by their fathers and taken into the latter's households, where they enjoyed luxuries far in excess of their own earning power. It was not that their fathers wasted any affection on them, for as I have explained before, the Hans were so morally atrophied and scientifically developed that love and affection, as we Americans knew them, were unexperienced or suppressed emotions with them. They were replaced by lust and pride of possession. So long as it pleased a father's vanity, and he did not miss the cost, he would keep a son with him, but no longer.

Young men, of course, started to work at the minimum wage,

which was somewhat higher than the pension. There was work for everybody in positions of minor responsibility, but very little hard work.

Upon receiving his appointment from one or another of the big corporations which handled the production and distribution of the vast community (the shares of which were pooled and held by the government—that is, by San-Lan himself—in trust for all the workers, according to their positions) he would be assigned to an apartment-office, or an apartment adjoining the group of offices in which he was to have his desk. Most of the work was done in single apartment-offices.

The young man, for instance, might recline at his ease in his apartment near the top of the city, and for three or four hours a day inspect, through his view-plate and certain specially installed apparatus, the output of a certain process in one of the vast automatically controlled food factories buried far underground beneath the base of the mountain, where the moan of its whirring and throbbing machinery would not disturb the peace and quiet of the citizens on the mountain top. Or he might be required simply to watch the operation of an account machine in an automatic store.

There is no denying that the



economic system of the Hans was marvelous. A suit of clothes, for instance, might be delivered in a man's apartment without a human hand having ever touched it.

Having decided that he wished a suit of a given general style, he would simply tune in a visual broadcast of the display of various selections, and when he had made his choice, dial the number of the item and press the order button. Simultaneously the charge would be automatically made against his account number, and credited as a sale on the automatic records of that particular factory in the account house. And his account plate, hidden behind a little wall door, would register his new credit balance. An automatically packaged suit that had been made to style and size-standard by automatic machinery from synthetically produced material, would slip into the delivery chute, magnetically addressed, and in anywhere from a few seconds to thirty minutes or so, according to the volume of business in the chutes, and drop into the delivery basket in his room.

**D**AILY his wages were credited to his account, and monthly his share of the dividends likewise (according to his position) from the Imperial Investment Trust, after deduction of taxes (through the automatic

bookkeeping machines) for the support of the city's pensioners and whatever sum San-Lan himself had chosen to deduct for personal expenses and gratuities.

A man could not bequeath his ownership interest in industry to his son, for that interest ceased with his death, but his credit accumulation, on which interest was paid, was credited to his eldest recorded son as a matter of law.

Since many of these credit fortunes (The Hans had abandoned gold as a financial basis centuries before) were so big that they drew interest in excess of the utmost luxury costs of a single individual, there was a class of idle rich consisting of eldest sons, passing on these credit fortunes from generation to generation. But younger sons and women had no share in these fortunes, except by the whims and favor of the "Man-Dins" (Mandarins), as these inheritors were known.

These Man-Dins formed a distinct class of the population, and numbered about five per cent of it. It was distinct from the Ku-Li (coolie) or common people, and from the "Ki-Ling" or aristocracy composed of those more energetic men (at least mentally more energetic) who were the active or retired executive heads of the various industrial, educational, military or political administrations.

A man might, if he so chose, transfer part of his credit to a woman favorite, which then remained hers for life or until she used it up, and of course, the prime object of most women, whether as wives, or favorites, was to beguile a settlement of this sort out of some wealthy man.

When successful in this, and upon reassuming her freedom, a woman ranked socially and economically with the Man-Dins. But on her death, whatever remained of her credit was transferred to the Imperial fund.

When one considers that the Hans, from the days of their exodus from Mongolia and their conquest of America, had never held any ideal of monogamy, and the fact that marriage was but a temporary formality which could be terminated on official notice by either party, and that after all it gave a woman no real rights or prerogatives that could not be terminated at the whim of her husband, and established her as nothing but the favorite of his harem, if he had an income large enough to keep one, or the most definitely acknowledged of his favorites if he hadn't, it is easy to see that no such thing as a real family life existed among them.

Free women roamed the corridors of the city, pathetically importuning marriage, and wives spent most of the time they were

not under their husbands' watchful eyes in flirtatious attempts to provide themselves with better prospects for their next marriages.

NATURALLY the biggest problem of the community was that of stimulating the birth rate. The system of special credits to mothers had begun centuries before, but had not been very efficacious until women had been deprived of all other earning power, and even at the time of which I write it was only partially successful, in spite of the heavy bounties for children. It was difficult to make the bounties sufficiently attractive to lure the women from their more remunerative light flirtations. Eugenic standards also were a handicap.

As a matter of fact, San-Lan had under consideration a revolutionary change in economic and moral standards, when the revolt of the forest men upset his delicately laid plans, for, as he had explained to me, it was no easy thing to upset the customs of centuries in what he was pleased to call the "morals" of his race.

He had another reason too. The physically active men of the community were beginning to acquire a rather dangerous domination. These included men in the army, in the airships, and in those relatively few civilian ac-

tivities in which machines could not do the routine work and thinking. Already common soldiers and air crews demanded and received higher remuneration than all except the highest of the Ki-Ling, the industrial and scientific leaders, while mechanics and repairmen who could, and would, work hard physically, commanded higher incomes than Princes of the Blood, and though constituting only a fraction of one per cent of the population they actually dominated the city. San-Lan dared take no important step in the development of the industrial and military system without consulting their council or Yun-Yun (Union), as it was known.

Socially the Han cities were in a chaotic condition at this time, between morals that were not morals, families that were not families, marriages that were not marriages, children who knew no homes, work that was not work, eugenics that didn't work; Ku-Lis who envied the richer classes but were too lazy to reach out for the rewards freely offered for individual initiative; the intellectually active and physically lazy Ki-Lings who despised their lethargy; the Man-Din drones who regarded both classes with supercilious toleration; the Princes of the Blood, arrogant in their assumption of a heritage from a Heaven in which they did

not believe; and finally the three castes of the army, air and industrial repair services, equally arrogant and with more reason in their consciousness of physical power.

THE army exercised a cruelly careless and impartial police power over all classes, including the airmen, when the latter were in port. But it did not dare to touch the repair men, who, so far as I could ever make out, roamed the corridors of the city at will during their hours off duty, wreaking their wills on whomever they met, without let or hindrance.

Even a Prince of the Blood would withdraw into a side corridor with his escort of a score of men, to let one of these labor "kings" pass, rather than risk an altercation which might result in trouble for the government with the Yun-Yun, regardless of the rights and wrongs of the case, unless a heavy credit transference was made from the balance of the Prince to that of the worker. For the machinery of the city could not continue in operation a fortnight, before some accident requiring delicate repair work would put it partially out of commission. And the Yun-Yun was quick to resent anything it could construe as a slight on one of its members.

In the last analysis it was

these Yun-Yun men, numerically the smallest of the classes, who ruled the Han civilization, because for all practical purposes they controlled the machinery on which that civilization depended for its existence.

Politically, San-Lan could balance the organizations of the army and the air fleets against each other, but he could not break the grip of the repairmen on the machinery of the cities and the power broadcast plants.

## CHAPTER XI

### The Forest Men Attack

MANY times during the months I remained prisoner among the Hans I had tried to develop a plan of escape, but could conceive of nothing which seemed to have any reasonable chance of success.

While I was allowed almost complete freedom within the confines of the city, and sometimes was permitted to visit even the military outposts and disintegrator ray batteries in the surrounding mountains, I was never without a guard of at least five men under the command of an officer. These men were picked soldiers, and they were armed with powerful though short-range disintegrator-ray pistols, capable of annihilating anything within a hundred feet. Their vigilance never relaxed. The officer

on duty kept constantly at my side, or a couple of paces behind me, while certain of the others were under strict orders never to approach within my reach, nor to get more than forty feet away from me. The thought occurred to me once to seize the officer at my side and use him as a shield, until I found that the guard were under orders to destroy both of us in such a case.

So in this fashion I roamed the city corridors, wherever I wished. I visited the great factories at the bottom of the shafts that led to the base of the mountain, where, unattended by any mechanics, great turbines whirled and moaned, giant pistons plunged back and forth, and immense systems of chemical vats, piping and converters, automatically performed their functions with the assistance of no human hand, but under the minute television inspection of many perfumed dandies reclining at their ease before view-plates in their apartment offices in the city, that clung to the mountain peak far above.

There were just two restrictions on my freedom of movement. I was allowed nowhere near the power broadcasting station on the peak, nor the complement of it which was buried three miles below the base of the mountain. And I was never allowed to approach within a hundred feet

of any disintegrator ray machine when I visited the military outposts in the surrounding mountains.

I first noticed the "escape tunnels" one day when I had descended to the lowest level of all, the location of the Electronic Plant, where machines, known as "reverse disintegrators," fed with earth and crushed rock by automatic conveyors, subjected this material to the disintegrator ray, held the released electrons captive within their magnetic fields and slowly refashioned them into supplies of metals and other desired elements.

My attention was attracted to the tunnels by the unusual fact that men were busily entering and leaving them. Almost the entire repair force seemed to be concentrated here. Stocky, muscular men they were, with the same modified Oriental countenances as the rest of the Hans, but with a certain ruggedness about them that was lacking in the rest of the indolent population. They sweated as they labored over the construction of magnetic cars evidently designed to travel down these tunnels, automatically laying pipe lines for ventilation and temperature control. The tunnels themselves appeared to have been driven with disintegrator rays, which could bore rapidly through the solid rock, forming glassy iridescent

walls as they bored, and involving no problem of debris removal.

I ASKED San-Lan about it the next time I saw him, for the officer of my guard would give me no information.

The supreme ruler of the Hans smiled mockingly.

"There is no reason why you should not know their purpose," he said, "for you will never be able to stop our use of them. These tunnels constitute the road to a new Han era. Your forest men have turned our cities into traps, but they have not trapped our minds and our powers over Nature. We are masters still; masters of the world, and of the forest men.

"You have revolutionized the tactics of warfare with your explosive rockets and your strategy of fighting from concealed positions, miles away, where we cannot find you with our beams. You have driven our ships from the air, and you may destroy our cities. But we shall be gone.

"Down these tunnels we shall depart to our new cities, deep under ground, and scattered far and wide through the mountains. They are nearly completed now.

"You will never blast us out of these, even with your most powerful explosives, because they will be more difficult for you to find than it is for us to locate a

forest gunner somewhere beneath his leafy screen of miles of trees, and because they will be too far underground."

"But," I objected, "man cannot live and flourish like a mole continually removed from the light of day, without the health-giving rays of the sun, which man needs."

"No?" San-Lan jeered. "Wild tribesmen might not be able to, but we are a civilization. We shall make our own sunlight to order in the bowels of the earth. If necessary, we can manufacture our air synthetically; not the germ-laden air of Nature, but absolutely pure air. Our underground cities will be heated or refrigerated artificially as conditions may require. Why should we not live underground if we desire? We produce all our needs synthetically.

"Nor will you be able to locate our cities with electronic indicators.

"You see, Rogers, I know what is in your mind. Our scientists have planned carefully. All our machinery and processes will be shielded so that no electronic disturbances will exist at the surface.

"And then, from our underground cities we will emerge at leisure to wage merciless war on your wild men of the forest, until we have at last done what our forefathers should have done, ex-

terminated them to the last beast."

HE thrust his jeering face close to mine. "Have you any answer to that?" he demanded.

My impulse was to plant my fist in his face, for I could think of no other answer. But I controlled myself, and even forced a hearty laugh, to irritate him.

"It is a fine plan," I admitted, "but you will not have time to carry it through. Long before you can complete your new cities you will have been destroyed."

"They will be completed within the week," he replied triumphantly. "We have not been asleep, and our mechanical and scientific resources make us masters of time as well as the earth. You shall see."

Naturally I was worried. I would have given much if I could have passed this information on to our chiefs.

But two days later a mighty exultation arose within me, when from far to the East and also to the South there came the rolling and continuous thunder of rocket fire. I was in my own apartment at the time. The Han captain of my guard was with me, as usual, and two guards stood just within the door. The others were in the corridor outside. And as soon as I heard it, I questioned my jailer with a look. He nodded assent, and I did

what probably every disengaged person in Lo-Tan did at the same moment, tuned in on the local broadcast of the Military Headquarters View and Control Room.

It was as though the side wall of my apartment had dissolved, and we looked into a large room or office which had no walls or ceiling, these being replaced by the interior surface of a hemisphere, which was in fact a vast viewplate on which those in the room could see in every direction. Some 200 staff officers had their desks in this room. Each desk was equipped with a system of small viewplates of its own, and each officer was responsible for a given directional section of the "map," and busied himself with teleprojectoscope examination of it, quite independently of the general view thrown on the dome plate.

At a raised circular desk in the center, which was composed entirely of viewplates, sat the Executive Marshal, scanning the hemisphere, calling occasionally for telescopic views of one section or another on his desk plates, and noting the little pale green signal lights that flashed up as Sector Observers called for his attention.

**M**EMBERS of Strategy Board, Base Commanders of military units, and San-Lan himself,

I understood, sat at similar desks in their private offices, on which all these views were duplicated, and in constant verbal and visual communication with one another and with the Executive Marshal.

The particular view which appeared on my own wall fortunately showed the East side of the dome viewplate and in one corner of my picture appeared the Executive Marshal himself.

Although I was getting a view plate picture of a viewplate picture, I could see the broad, rugged valley to the East plainly, and the relatively low ridge beyond, which must have been some thirty miles away.

It was beyond this, evidently far beyond it, that the scene of the action was located, for nothing showed on the plate but a misty haze permeated by indefinite and continuous pulsations of light, and against which the low mountain ridge stood out in bold relief.

Somewhere on the floor of the Observation room, of course, was a Sector Observer who was looking beyond that ridge, probably through a projectoscope station in the second or third "circle," located perhaps on that ridge or beyond it.

At the very moment I was wishing for his facilities the Executive Marshal leaned over to a microphone and gave an order in

a low tone. The hemispherical view dissolved, and another took its place, from the third circle. And the view was now that which would be seen by a man standing on the low distant ridge.

There was another broad valley, a wide and deep canyon, in fact, and beyond this still another ridge, the outlines of which were already beginning to fade into the on-creeping haze of the barrage. The flashes of the great detonating rockets were momentarily becoming more vivid.

"That's the Gok-Man ridge," mused the Han officer beside me in the apartment, "and the Forest Men must be more than fifty miles beyond that."

"How do you figure that?" I asked curiously.

"Because obviously they have not penetrated our scout lines. See that line of observers nearest the dome itself. They're all busy with their desk plates. They're in communication with the scout line. The scout line broadcast is still in operation. It looks as though the line is still unpierced, but the tribesmen's rockets are sailing over and falling this side of it."

All through the night the barrage continued. At times it seemed to creep closer and then recede again. Finally it withdrew, pulling back to the American lines, to alternately advance and recede. At last I went to

sleep. The Han officer seemed to be a relatively good-natured fellow, for one of his race, and he promised to awake me if anything further of interest took place.

He didn't though. When I awoke in the morning, he gave me a brief outline of what had happened.

It was pieced together from his own observations and the public news broadcast.

## CHAPTER XII

### The Mysterious "Air Balls"

THE American barrage had been a long distance bombardment, designed, apparently, to draw the Han disintegrator ray batteries into operation and so reveal their positions on the mountain tops and slopes, for the Hans, after the destruction of Nu-Yok, had learned quickly that concealment of their positions was a better protection than a surrounding wall of disintegrator rays shooting up into the sky.

The Hans, however, had failed to reply with disintegrator rays. For already this arm, which formerly they had believed invincible, was being restricted to a limited number of their military units, and their factories were busy turning out explosive rockets not dissimilar to those of the Americans in their motive power



and atomic detonation. They had replied with these, shooting them from unrevealed positions, and at the estimated positions of the Americans.

Since the Americans, not knowing the exact location of the Han outer line, had shot their barrage over it, and the Hans had fired at unknown American positions, this first exchange of fire had done little more than to churn up vast areas of mountain and valley.

The Hans appeared to be elated, to feel that they had driven off an American attack. I knew better. The next American move, I felt, would be the occupation of the air, from which they had driven the Hans, and from swoopers to direct the rocket fire at the city itself. Then, when they had destroyed this, they would sweep in and hunt down the Hans, man to man, in the surrounding mountains. Command of the air was still important in military strategy, but command of the air rested no longer in the air, but on the ground.

The Hans themselves attempted to scout the American positions from the air, under cover of a massed attack of ships in "cloud bank" or beaming formation, but with very little success. Most of their ships were shot down, and the remainder slid back to the city on sharply

inclined repeller rays, one of them which had its generators badly damaged while still fifty miles out, collapsed over the city, before it could reach its berth at the airport, and crashed down through the glass roof of the city, doing great damage.

Then followed the "air balls," an unforeseen and ingenious resurrection by the Americans of an old principle of air and submarine tactics, through a modern application of the principle of remote control.

The air balls took heavy toll of the morale of the Hans before they were clearly understood by them, and even afterward for that matter.

THEIR first appearance was quite mysterious. One uneasy night, while the pulsating growl of the distant barrage kept the nerves of the city's inhabitants on edge, there was an explosion near the top of a pinnacle not far from the Imperial Tower. It occurred at the 732nd level, and caused the structure above it to lean and sag, though it did not fall.

Repair men who shot up the shafts a few minutes later to bring new broadcast lamps to replace those which had been shattered, reported what seemed to be a sphere of metal, about three feet in diameter, with a four-inch lens in it, floating slow-

ly down the shaft, as though it were some living creature making a careful examination, pausing now and then as its lens swung about like a great single eye. The moment this "eye" turned upon them, they said, the ball "rushed" down on them, crushing several to death in its vicious gyrations, and jamming the mechanism of the elevator, though failing to crash through it. Then, said the wounded survivors, it floated back up the shaft, watchfully "eyeing" them, and slipped off to the side at the wrecked level.

The next night several of these "air balls" were seen, following explosions in various towers and sections of the city roof and walls. In each case repair gangs were "rushed" by them, and suffered many casualties. On the third night a few of the air balls were destroyed by the repair men and guards, who now were equipped with disintegrator pistols.

This, however, was pretty costly business, for in each case the ray bored into the corridor and shaft walls beyond its target, wrecking much machinery, injuring the structural members of that section, penetrating apartments and taking a number of lives. Moreover, the "air balls," being destroyed, could not be subjected to scientific inspection.

After this the explosions ceased. But for many days the sudden appearances of those "air balls" in the corridors and shafts of the city caused the greatest confusion, and many times they were the cause of death and panic.

At times they released poison gases, and not infrequently themselves burst, instead of withdrawing, in a veritable explosion of disease germs, requiring absolute quarantine by the Han medical department.

There was an utter heartlessness about the defense of the Han authorities, who considered nothing but the good of the community as a whole; for when they established these quarantines, they did not hesitate to seal up thousands of the city's inhabitants behind hermetic barriers enclosing entire sections of different levels, where deprived of food and ventilation, the wretched inhabitants died miserably, long before the disease germs developed in their systems.

AT the end of two weeks the entire population of the city was in a mood of panicky revolt. News service to the public had been suspended, and the use of all viewplates and 'phones in the city were restricted to official communications. The city administration had issued orders

that all citizens not on duty should keep to their apartments, but the order was openly flouted, and small mobs were wandering through the corridors, ascending and descending from one level to another, seeking they knew not what, fleeing the air balls, which might appear anywhere, and being driven back from the innermost and deepest sections of the city by the military guard.

I now made up my mind that the time was ripe for me to attempt my escape. In all this confusion I might have an even break, in spite of the danger I might myself run from the air balls, and the almost insuperable difficulties of making my way to the outside of the city and down the precipitous walls of the mountain to which the city clung like a cap. I would have given much for my inertron belt, that I might simply have leaped outward from the edge of the roof some dark night and floated gently down. I longed for my ultraphone equipment, with which I might have established communication with the beleaguering American forces.

My greatest difficulty, I knew, would be that of escaping my guard. Once free of them, I figured it would be the business of nobody in particular, in that badly disorganized city, to recapture me. The knives of the

ordinary citizens I did not fear, and very few of the military guard were armed with disintegrator pistols.

I was sitting in my apartment busying my mind with various plans, when there occurred a commotion in the city corridor outside my door. The Captain of my guard jumped nervously from the couch on which he had been reclining, and ordered the excited guards to open the door.

In the broad corridor, the remainder of the guard lay about, dead or groaning, where they had been bowled over by one of these air balls, the first I had ever seen.

The metal sphere floated hesitantly above its victims, turning this way and that to bring its "eye" on various objects around. It stopped dead on sighting the door the guard had thrown open, hesitated a moment, and then shot suddenly into the apartment with a hissing sound, flinging into a far corner one of the guards who had not been quick enough to duck. As the Captain drew his disintegrator pistol, it launched itself at him with a vicious hiss. He bounded back from the impact, his chest crushed in, while his pistol, which fortunately had fallen with its muzzle pointed away from me, shot a continuous beam that melted its way instantly through the apartment wall.

THE sphere then turned on the other guard, who had thrown himself into a corner where he crouched in fear. Deliberately it seemed to gauge the distance and direction. Then it hurled itself at him with another vicious hiss, which I now saw came from a little rocket motor, crushing him to death where he lay.

It swung slowly around until the lens faced me again, and floated gently into position level with my face, seeming to scan me with its blank, four-inch eye. Then it spoke, with a metallic voice.

"If you are an American," it said, "answer with your name, gang and position."

"I am Anthony Rogers," I replied, still half bewildered, "Boss of the Wyomings. I was captured by the Hans after my swooper was disabled in a fight with a Han airship and had drifted many hundred miles westward. These Hans you have killed were my guard."

"Good!" ejaculated the metal ball. "We have been hunting for you with these remote control rockets for two weeks. We knew you had been captured. A Han message was picked up. Close the door of your room, and hide this ball somewhere. I have turned off the rocket power. Put it on your couch. Throw some pillows over it. Get out of sight. We'll speak softly, so no Hans can

hear, and we'll speak only when you speak to us."

The ball, I found, was floating freely in the air. So perfectly was it balanced with ultrason and inerton that it had about the weight of a spider web. Ultimately, I suppose, it would have settled to the floor. But I had no time for such an idle experiment. I quickly pushed it to my couch, where I threw a couple of pillows and some of the bed clothes over it. Then I threw myself back on the couch with my head near it. If the dead guards outside attracted attention, and the Han patrol entered, I could report the attack by the "air ball" and claim that I had been knocked unconscious by it.

"One moment," said the ball, after I reported myself ready to talk. "Here is someone who wants to speak to you." And I nearly leaped from the couch with joy when, despite the metallic tone of the instrument, I recognized the eager, loving voice of my wife, almost hysterical in her own joy at talking to me again.

## CHAPTER XIII

### Escape!

WE had little time, however, to waste in endearments, and very little to devote to informing me as to the American plans. The essential thing was

that I report the Han plans and resources to the fullest of my ability. And for an hour or two I talked steadily, giving an outline of all I had learned from San-Lan and his Councillors, and particularly of the arrangements for drawing off the population of the city to new cities concealed underground, through the system of tunnels radiating from the base of the mountain. And as a result, the Americans determined to speed up their attack.

There were, as a matter of fact, only two relatively small commands facing the city, Wilma told me, but both of them were picked troops of the new Federal Council. Those to the South were a division of veterans who a few weeks before had destroyed the Han city of Sa-Lus (St. Louis). On the East were a number of the Colorado Gangs and an expeditionary force of our own Wyomings. The attack on Lo-Tan was intended chiefly as an attack on the morale of the Hans of the other twelve cities. If there seemed to be a chance of victory, the operations were to be pushed through. Otherwise the object would be to do as much damage as possible, and fade away into the forests if the Hans developed any real pressure with their new infantry and field batteries of rocket guns and disintegrator-rays.

The "air balls" were simply miniature swoopers of spherical shape, ultrasonically controlled by operators at control boards miles away, and who saw on their view-plates whatever picture the ultrasonic television lens in the sphere itself picked up at the predetermined focus. The main propulsive rocket motor was diametrically opposite the lens, so that the sphere could be steered simply by keeping the picture of its objective centered on the crossed hairlines of the view-plates. The outer shell moved magnetically as desired with respect to the core, which was gyroscopically stabilized. Auxiliary rocket motors enabled the operator to make a sphere move sidewise, backward or vertically. Some of these spheres were equipped with devices which enabled their operators to hear as well as see through their ultrasonic broadcasts, and most of those which had invaded the interior of Lo-Tan were equipped with "speakers," in the hope of finding me and establishing communication. Still others were equipped for two-stage control. That is, the operator control led the vision sphere, and through it watched and steered an air torpedo that travelled ahead of it.

The Han airship or any other target selected by the operator of such a combination was doomed. There was no escape.

The spheres and torpedoes were too small to be hit. They could travel with the speed of bullets. They could trail a ship indefinitely, hover a safe distance from their mark, and strike at will. Finally, neither darkness nor smoke screens were any bar to their ultronic vision. The spheres, which had penetrated and explored Lo-Tan in their search for me, had floated through breaches in the walls and roofs made by their advance torpedoes.

**W**ILMA had just finished explaining all this to me when I heard a noise outside my door. With a whispered warning I flung myself back on the couch and simulated unconsciousness. When I did not answer the poundings and calls to open, a police detail broke in and shook me roughly.

"The air ball," I moaned, pretending to regain consciousness slowly. "It came in from the corridor. Look, what it did to the guard. It must have grazed my head. Where is it?"

"Gone," muttered the under-officer, looking fearfully around. "Yes, undoubtedly gone. These men have been dead some time. And this pistol. The ball got him before he had a chance to use it. See, it has beamed through the wall only here, where he dropped it. Who are you? You look like a

tribesman. Oh, yes, you're the Heaven Born's special prisoner. Maybe I ought to beam you right now. Good thing. Everyone would call it an accident. By the Grand Dragon, I will!"

While he was talking, I had staggered to the other side of the room, to draw his attention away from the couch where the ball was concealed.

Now suddenly the pillows burst apart, and a blanket with which I had covered the thing streaked from the couch, hitting the man in the small of the back. I could hear his spine snap under the impact. Then it shot through the air toward the group of soldiers in the doorway, bowling them over and sending them shrieking right and left along the corridor. Relentlessly and with amazing speed it launched itself at each in turn, until the corpses lay grotesquely strewn about, and not one had escaped.

It returned to me for all the world like an old-fashioned ghost, the blanket still draped over it (and not interfering with its ultronic vision in the least) and "stood" before me.

"The yellow devils were going to kill you, Tony," I heard Wilma's voice saying. "You've got to get out of there, Tony, before you are killed. Besides, we need you at the control boards, where you can make real use of your knowledge of the city. Have you

your jumping belt, ultraphone and rocket gun?"

"No," I replied, "they are all gone."

"It would be no good for you to try to make your way to one of the breaches in the wall, nor to the roof," she mused.

"No, they are too well guarded," I replied, "and even if you made a new one at a predetermined spot I'm afraid the repair men and the patrol would go to it ahead of me."

"Yes, and they would beam you before you could climb inside of a swooper," she added.

"I'll tell you what I can do, Wilma," I suggested. "I know my way about the city pretty well. Suppose I go down one of the shafts to the base of the mountain. I think I can get out. It is dark in the valley, so the Hans cannot see me, and I will stand out in the open, where your ultrosopes can pick me up. Then a swooper can drop quickly down and get me."

"Good!" Wilma said. "But take that Han's disintegrator pistol with you. And go right away, Tony. But wrap this ball in something and carry it with you. Just toss it from you if you are attacked. I'll stay at the control board and operate it in case of emergency."

SO I picked up ball and pistol, and thrust the hand in which

I held it into the loose Han blouse I wore, wrapped the ball in a piece of sheeting, and stepped out in the corridor, hurrying toward the nearest magnetic car station, a couple of hundred feet down the corridor, for I had to cross nearly the entire width of the city to reach the shaft that went to the base of the mountain.

I thanked Providence for the perfection of the Han mechanical devices when I reached the station. The automatic checking system of these cars made station attendants unnecessary. I had only to slip the key I had taken from the dead Han officer into the account-charting machine at the station to release a car.

Pressing the proper combinations of main and branch line buttons, I seated myself, holding the pistol ready but concealed beneath my blouse. The car shot with rapid acceleration down the narrow tunnel.

The tubes in which these magnetic cars (which slid along a few inches above the floor of the tunnel by localized repeller rays) ran were very narrow, just the width of the car, and my only danger would come if on catching up to another car its driver should turn around and look in my face. If I kept my face to the front, and hunched over so as to conceal my size, no driver of a following car would suspect that

I was not a Han like himself.

The tube dipped under traffic as it came to a trunk line, and my car magnetically lagged, until an opening in the traffic permitted it to swing swiftly into the main line tunnel. At the automatic distance of ten feet it followed a car in which rode a scantily-clad girl, her flimsy silks fluttering in the rush of air. I cursed my luck. She would be far more likely to turn around than a man, to see if a man were in the car behind, and if he were personable—for not even the impending doom of the city and the public demoralization caused by the "air balls" had dulled the proclivities of the Han women for brazen flirtation. And turn around she did.

Before I could lower my head she had seen my face, and knew I was no Han. I saw her eyebrows arch in surprise. But she seemed puzzled rather than scared. Before she could make up her mind about me, however, her car had swung out of the main tunnel on its predetermined course, and my own automatically was closing up the gap to the car ahead. The passenger in this one wore the uniform of a medical officer, but he did not turn around before I swung out of main traffic to the little station at the head of the shaft.

This particular shaft was intended to serve the very lowest levels exclusively, and since its

single car carried nothing but express traffic, it was used only by repair men and other specialists who occasionally had to descend to those levels.

THERE were only three people on the little platform, which reminded me very much of the subway stations of the Twentieth Century. Two men and a girl stood facing the gate of the shaft, waiting for the car to return from below. One of these was a soldier, apparently off duty, for though he wore the scarlet military coat he carried no weapons other than his knife. The other man wore nothing but sandals and a pair of loose short pants of some heavy and serviceable material. I did not need to look at the compact tool kit and the ray machines attached to his heavy belt, nor the gorgeously jewelled armlet and diadem that he wore to know him for a repair man.

The girl was quite scantily clad, but wore a mask, which was not unusual among the Han women when they went forth on their flirtatious expeditions, and there was something about the sinuous grace of her movements that seemed familiar to me. She was making desperate love to the repair man, whose attitude toward her was that of pleased but lofty tolerance. The soldier, who was seeking no trouble, occupied



himself strictly with his own thoughts and paid little attention to them.

I stepped from my car, still carrying my bundle in which the "air ball" was concealed, and the car shot away as I threw the release lever over. Not so successful as the soldier in simulating lack of interest in the amorous girl and her companion, I drew from the latter a stare of haughty challenge, and the girl herself turned to look at me through her mask.

She gasped as she did so, and shrank back in alarm. And I knew her then in spite of her mask. She was the favorite of the Heaven Born himself.

"Ngo-Lan!" I exclaimed before I could catch myself.

At the mention of her name, the soldier's head jerked up quickly, and the girl herself gave a little cry of terror, shrinking against her burly companion. This would mean death for her if it reached the ears of her lord.

And her companion, arrogant in his immunity as a repair man, hesitated not a second. His arm shot out toward the soldier, who was nearer to him than I. There was the flash of a knife blade, and the soldier sagged on his feet, then tumbled over like a sack of potatoes, and before my mind had grasped the danger, he had swept the girl aside and was springing at me.

THAT I lived for a moment even was due to the devotion of my wife, Wilma, who somewhere in the mountains to the East was standing loyally before the control board of the air ball I carried.

For even as the Han leaped at me, the bundle containing the air ball, which I had placed at my feet, shot diagonally upward, catching the fellow in the middle of his leap, hurling him back against the grilled gate of the elevator shaft, and pinning his lifeless body there.

An instant the girl gazed in speechless horror at what had been her secret lover, then she threw herself at my feet, writhing and shrieking in terror.

At this moment, the elevator shot to a sudden stop behind the grill, and prepared for the worst, I faced it, disintegrator pistol raised.

But I lowered the pistol at once, with a sigh of relief. The elevator was empty. For a moment I considered. I dared not leave either of these bodies nor the girl behind in descending the shaft. At any moment other passengers might glide out of the tunnel to take the elevator, and give an alarm.

So I played the beam of the pistol for an instant on the two dead bodies. They vanished, of course, into nothingness, as did part of the station platform. The

damage to the platform, however, would not necessarily be interpreted as evidence of a prisoner escaping.

Then I threw open the elevator gate, dragging Ngo-Lan into the car and stifling her hysterical shrieks, pressed the button that caused it to shoot downward. In a few moments I stepped out several thousand feet below, into a shaft that ran toward one of the Valley Gates.

The pistol again became serviceable, this time for the destruction of the elevator, thus blocking any possible pursuit, yet without revealing my flight.

Ngo-Lan fought like a cat, but despite her writhing, scratching and biting, I bound and gagged her with her own clothing, and left her lying in the tunnel while I stepped in a car and shot toward the gate.

As the car glided swiftly along the brilliantly lit but deserted tunnel I conversed again with Wilma through the metallic speaker of the air ball.

"The only obstacle now," I told her, "is the massive gate at the end of the tunnel. The gate-guard, I think, is posted both outside and inside the gate."

"In that case, Tony," she replied, "I will shoot the ball ahead, and blow out the gate. When you hear it bump against the gate, throw yourself flat in the car, for an instant later I will explode it.

Then you can rush through the gate into the night. Scout ships are now hovering above, and they will see you with their ultrascopes, though the darkness will leave you invisible to the Hans.

WITH this the ball shot out of the car and flashed away, down the tunnel ahead of me. I heard a distant metallic thump, and crouched low in the speeding car, clapping my hands to my ears. The heavy detonation which followed, struck me like a blow, and left me gasping for breath. The car staggered like a living thing that had been struck, then gathered speed again and shot forward toward the gaping black hole where the gate had been.

I brought it to a stop at the pile of debris, and climbed through this to freedom and the night. Stumblingly I made my way out into the open, and waited.

Behind, and far above me on the mountain peak, the lights of the city gleamed and flashed, while the iridescent beams of countless disintegrator ray batteries on surrounding mountain peaks, played continuously and nervously, criss-crossing in the sky above it.

Then with a swish, a line dropped out of the sky, and a little seat rested on the ground beside me. I climbed into it, and without further ado was whisked

up into the swooper that floated a few hundred feet above me.

A half an hour later I was deposited in a little forest glade where the headquarters of the Wyoming Gang were located, and was greeted with a frantic disregard for decorum by the Deputy Boss of the Wyomings, who rushed upon me like a whirlwind, laughing, crying and whispering endearments all in the same breath, while I squeezed her, Wilma, my wife, until at last she gasped for mercy.

#### CHAPTER XIV

##### *The Destruction of Lo-Tan*

HOW did you know I had been taken to Lo-Tan as a prisoner?" I asked the little group of Wyoming Bosses who had assembled in Wilma's tent to greet me. "And how does it happen that our gang is away out here in the Rocky Mountains? I had expected, after the fall of Nu-Yok, that you would join the forest ring around Bah-Flo (Buffalo I called it in the Twentieth Century) or the forces beleaguering Bos-Tan."

They explained that my encounter with the Han airship had been followed carefully by several scopemen. They had seen my swooper shoot skyward out of control, and had followed it with their telutronesopes until it had been caught in a gale at a high

level, and wafted swiftly westward. Ultratonephone warnings had been broadcast, asking Western gangs to rescue me if possible. Few of the gangs West of the Alleghanies, however, had any swoopers, and though I was frequently reported, no attempts could be made to rescue me. Scopemen had reported my capture by the Han ground post, and my probable incarceration in Lo-Tan.

The Rocky Mountain Gangs, in planning their campaign against Lo-Tan, had appealed to the East for help, and Wilma had led the Wyoming veterans westward, though the other eastern gang had divided their aid between the armies before Bah-Flo and Bos-Tan.

The heavy bombardment which I had heard from Lo-Tan, they told me, was merely a test of the enemy's tactics and strength, but it accomplished little other than to develop that the Hans had the mountains and peaks thickly planted with rocket gunners of their own. It was almost impossible to locate these gun posts, for they were well camouflaged from air observation, and widely scattered; nor did they reveal their positions when they went into action as did their ray batteries.

The Hans apparently were abandoning their rays except for air defense. I told what I knew of

the Han plans for abandoning the city, and their escape tunnels. On the strength of this, a general council of Gang Bosses was called. This council agreed that immediate action was necessary, for my escape from the city probably would be suspected, and San Lan would be inclined to start an exodus at once.

AS a matter of fact, the destruction of the city presented no real problem to us at all. Explosive air balls could be sent against any target under a control that could not be better were their operators riding within them, and with no risk to the operators. When a ball was exploded on its target by the operator, or destroyed by accident, he simply reported the fact to the supply division, and a fresh one was placed on the jump-off, tuned to his controls.

To my own Gang, the Wyomings, the Council delegated the destruction of the escape tunnels of the enemy. We had a comfortably located camp in a wooded canyon, some hundred and thirty miles northeast of the city, with about 500 men, most of whom were bayonet-gunners, 350 girls as long-gunners and control-board operators, 91 control boards and about 250 five-foot, inertron protected air balls, of which 200 were of the explosive variety.

I ordered all control boards manned, taking Number One myself, and instructed the others to follow my lead in single file, at the minimum interval of safety, with their projectiles set for signal rather than contact detonation.

In my mind I paid humble tribute to the ingenuity of our engineers as I gently twisted the lever that shot my projectile vertically into the air from the jump-off clearing some half mile away.

The control board before me was a compact contrivance about five feet square. The center of it contained a four-foot viewplate. Whatever view was picked up by the ultronscope "eye" of the air ball was automatically broadcast on an accurate tuning channel to this viewplate by the automatic mechanism of the projectile. In turn my control board broadcast the signals which automatically controlled the movements of the ball.

Above and below the viewplate were the pointers and the swinging needles which indicated the speed and angle of vertical movement, the altimeter, the directional compass, and the horizontal speed and distance indicators.

At my left hand was the lever by which I could set the "eye" for penetrative, normal or varying degrees of telescopic vision,

and at my right the universally jointed stick (much like the "joy stick" of the ancient airplanes) with its speed control button on the top, with which the ball was directionally "pointed" and controlled.

The manipulation of these levers I had found, with a very little practice, most instinctive and simple.

So, as I have said, I pointed my projectile straight up and let it shoot to the height of two miles. Then I levelled it off, and shot it at full speed (about 500 miles an hour with no allowance for air currents) in a general southwesterly direction, while I eased my controls until I brought in the telescopic view of Lo-Tan. I centered the picture of the city on the crossed hairlines in the middle of my viewpoint, and watched its image grow.

IN about fifteen minutes the "string" of air balls was before the city, and speaking in my ultraphone I gave the order to halt, while I swung the scope control to the penetrative setting and let my "eye" rove slowly back and forth through the walls of the city, hunting for a spot from which I might get my bearings. At last, after many penetrations, I managed to bring in a view of the head of the shaft at the bottom of which I knew the tunnels were located, and saw

that we were none too soon, for all the corridors leading toward this shaft were packed with Hans waiting their turn to descend.

Slowly I let my "eye" retreat down one of these corridors until I "pulled it out" through the outer wall of the city. There I held the spot on the crossed hairlines and ordered Number Two Operator to my control board, where I pointed out to her the exact spot where I desired a breach in the wall. Returning to her own board, she withdrew her ball from the "string," and focussing on this spot in the wall, eased her projectile into contact with it and detonated.

The atomic force of the explosion shattered a vast section of the wall, and for the moment I feared I had balked my own game by not having provided a less powerful projectile.

After some fumbling, however, I was able to maneuver my ball through a gap in the debris and find the corridor I was seeking. Down this corridor I sent it at the speed of a Twentieth Century bullet, (this is to say, about half speed) to spare myself the sight of the slaughter as it cut a swath down the closely packed column of the enemy. If there were any it did not kill, I knew they would be taken care of by the other balls in the string which would follow.

I had to slow it up, however,

near the head of the shaft to take my bearings; and a sea of evil faces, contorted with livid terror, looked at me from my viewport. But not even the terror could conceal the hate in those faces, and there arose in my mind the picture of their long centuries of ruthless cruelty to my race, and the hopelessness of changing the tigerish nature of these Hans. So I steeled myself, and drove the ball again and again into that sea of faces, until I had cleared the station platform of any living enemy, and sent the survivors crushing their way madly along the corridors away from it. There was blinding flash or two on my viewport as some Han officer tried his ray pistol on my projectile, but that was all, except that he must have disintegrated many of his fellows, for our balls were sheathed in inertron, and suffered no damage themselves.

**C**AUTIONING my unit to follow carefully, I pushed my control lever all the way forward until my "eye" pointed down, and there appeared on my viewport the smooth cylindrical interior of the shaft, fading down toward the base of the mountain, and like a tiny speck, far, far down, was the car, descending with its last load.

I dropped my ball on it, battering it down to the bot-

tom of the shaft, and with hammer-like blows flattening the wreckage, that I might squeeze the ball out of the shaft at the lower station.

It emerged into the great vaulted excavation, capable of holding a thousand or more persons, from which the various escape tunnels radiated. Down these tunnels the last remnants of a crowd of fugitives were disappearing, while red-coated soldiers guided the traffic and suppressed disorder with the threat of their spears, and the occasional flourish of a ray pistol.

As I floated my ball out into the middle of the artificial cavern I could see them stagger back in terror. Again the blinding flashes of a few ray pistols, and instantaneous borings of the rays into the walls. The red coats nearest the escape tunnels fled down them in panic. Those whose escape I blocked dropped their weapons and shrank back against the smooth, iridescent green walls.

I marshalled the rest of my string carefully into the cavern, and counted the tunnel entrances, slowly swinging my "eye" around the semicircle of them. There were 26 corridors diverging to the north and west. I decided to send three balls down each, leave 12 in the cavern, then detonate them all at once.

Assigning my operators to their corridors, I ordered intervals of five miles between them, and taking the lead down the first corridor, I ordered "go."

Soon my ball overtook the stream of fugitives, smashing them down despite ray pistols and even rockets that were shot against it. On and on I drove it, time and again battering it through detachments of fleeing Hans, while the distance register on my board climbed to ten, twenty, fifty miles.

Then I called a halt, and suspended my previous orders. I had had no idea that the Hans had bored these tunnels for such distances under the surface of the ground as this. It would be necessary to trace them to their ends and locate their new underground cities in which they expected to establish themselves, and in which many had established themselves by now, no doubt.

Fifty miles of air in these corridors, I thought, ought to prove a pretty good cushion against the shock of detonation in the cavern. So I ordered detonation of the twelve balls we had left behind. As I expected, there was little effect from it so far out in the tunnels.

But from our scopemen who were covering the city from the outside, I learned that the effects of the explosion on the

mountain were terrific; far more than I had dared to hope for.

THE mountain itself burst asunder in several spots, throwing out thousands of tons of earth and rock. One-half the city itself tore loose and slid downward, lost in the debris of the avalanche of which it was a part. The remainder, wrenched and convulsed like a living thing in agony, cracked, crumbled and split, towers tumbling down and great fissures appearing in its walls. Its power plant and electro machinery went out of commission. Fifteen of its scout ships hovering in the air directly above, robbed of the power broadcast and their repeller beams disappearing, crashed down into the ruins.

But out in the escape tunnels, we continued our explorations, now sure that no warnings could be broadcast to the tunnel exits, and mowed down contingent after contingent of the hated yellow men.

My register showed seventy-five miles before I came to the end of the tunnel, and drove my ball out into a vast underground city of great, brilliantly illuminated corridors, some of them hundreds of feet high and wide. The architectural scheme was one of lace-like structures of curving lines and of indescribable beauty.

Word had reached us now of the destruction of the city itself, so that no necessity existed for destroying the escape tunnels. In consequence, I ordered the two operators, who were following me, to send their balls out into this underground city, seeking the shaft which the Hans were sure to have as a secret exit to the surface of the earth above.

But at this juncture events of transcending importance interrupted my plans for a thorough exploration of these new subterranean cities of the Hans. I detonated my projectile at once and ordered all of the operators to do so, and to tune in instantly on new ones. That we wrecked most of these new cities I now know, but of course at the time we were in the dark as to how much damage we caused, since our viewplates naturally went dead when we detonated our projectiles.

## CHAPTER XV

### The Counter-Attack

THE news which caused me to change my plans was grave enough. As I have explained, the American lines lay roughly to the east and the south of the city in the mountains. My own Gang held the northern flank of the east line. To the south of us was the Colorado Union, a force of

5,000 men and about 2,000 girls recruited from about fifteen Gangs. They were a splendid organization, well disciplined and equipped. Their posts, rather widely distributed, occupied the mountain tops and other points of advantage to a distance of about a hundred and fifty miles to the south. There the line turned east, and was held by the Gangs which had come up from the south. Now, simultaneously with the reports from my scouts that a large Han land force was working its way down on us from the north, and threatening to outflank us, came word from Jim Hallwell, Big Boss of the Colorado Union and the commander in chief of our army, that another large Han force was to the southwest of our western flank. And in addition, it seemed, most of the Han military forces at Lo-Tan had been moved out of the city and advanced toward our lines before our air-ball attack.

The situation would not have been in the least alarming if the Hans had had no better arms to fight with than their disintegrator rays, which naturally revealed the locations of their generators the second the visible beams went into play, and their airships, which we had learned how to bring down, first from the air, and now from the ground, through ultrono-controlled projectiles.



But the Hans had learned their lesson from us by this time. Their electrono-chemists had devised atomic projectiles, rocket-propelled, very much like our own, which could be launched in a terrific barrage without revealing the locations of their batteries, and they had equipped their infantry with rocket guns not dissimilar to ours. This division of their army had been expanded by general conscription. So far as ordnance was concerned, we had little advantage over them; although tactically we were still far superior, for our jumping belts enabled our men and girls to scale otherwise inaccessible heights, conceal themselves readily in the upper branches of the giant trees, and gave them a general all around mobility, the enemy could not hope to equal.

We had the advantage too, in our ultronophones and scopes, in a field of energy which the Hans could not penetrate, while we could cut in on their electrono or (as I would have called it in the Twentieth Century) radio broadcasts.

LATER reports showed that there were no less than 10,000 Hans in the force to our north, which evidently was equipped with a portable power broadcast, sufficient for communication purposes and the local

operation of small scoutships, painted a green which made them difficult to distinguish against the mountain and forest backgrounds. These ships just skimmed the surface of the terrain, hardly ever outlining themselves against the sky. Moreover, the Han commanders wisely had refrained from massing their forces. They had developed over a very wide and deep front, in small units, well scattered, which were driving down the parallel valleys and canyons like spearheads. Their communications were working well too, for our scouts reported their advance as well restrained, and maintaining a perfect front as between valley and valley, with a secondary line of heavy batteries, moved by small airships from peak to peak, following along the ridges somewhat behind the valley forces.

Hallwell had determined to withdraw our southern wing, pivoting it back to face the outflanking Han force on that side, which had already worked its way well down in back of our line.

In the ultronophone council which we held at once, each Boss tuning in on Hallwell's band, though remaining with his unit, Wilma and I pleaded for a vigorous attack rather than a defensive maneuver. Our suggestion was to divide the American

forces into three divisions, with all the swoopers forming a special reserve, and to advance with a rush on the three Han forces behind a rolling barrage.

But the best we could do was to secure permission to make such an attack with our Wyomings, if we wished, to serve as a diversion while the lines were reforming. And two of the southern Gangs on the west flank, which were eager to get at the enemy, received the same permission.

The rest of the army fumed at the caution of the council, but it spoke well for their discipline that they did not take things in their own hands, for in the eyes of those forest men who had been hounded for centuries, the chance to spring at the throats of the Hans outweighed all other considerations.

So, as the council signed off, Wilma and I turned to the eager faces that surrounded us, and issued our orders.

**I**N a moment the air was filled with leaping figures as the men and girls shot away over the tree tops and up the mountain sides in the deployment movement.

A group of our engineers threw themselves headlong toward a cave across the valley, where they had rigged out a powerful electrono plant operat-

ing from atomic energy. And a few moments later the little portable receiver, the Intelligence Boss used to pick up the enemy messages, began to emit such ear-splitting squeals and howls that he shut it off. Our heterodyne or "radio-scrambling" broadcast had gone into operation, emitting impulses of constantly varying wavelength over the full broadcast range and heterodyning the Han communications into futility.

In a little while our scouts came leaping down the valley from the north, and our air balls now were hovering above the Han lines, operators at the control boards near-by painstakingly picking up the pictures of the Han squads struggling down the valleys with their comparatively clumsy weapons.

As fast as the air-ball scopes picked out these squads, their operators, each of whom was in ultronophone communication with a girl long-gunner at some spot in our line, would inform her of the location of the enemy unit, and the latter, after a bit of mathematical calculation, would send a rocket into the air which would come roaring down on, or very near that unit, and wipe it out.

But for all of that, the number of the Han squads was too much for us. And for every squad we destroyed, fifty advanced.

And though the lines were still several miles apart, in most places, and in some cases with mountain ridges intervening, the Han fire control began to sense the general location of our posts, and things became more serious as their rockets too began to hiss down and explode here and there in our lines, not infrequently killing or maiming one or more of our girls.

The men, our bayonet-gunners, had not as yet suffered, for they were well in advance of the girls, under strict orders to shoot no rockets nor in any way reveal their positions; so the Han rockets were going over their heads.

THE Hans in the valleys now were shooting diagonal barrages up the slopes toward the ridges, where they suspected we would be most strongly posted, thus making a cross-fire up the two sides of a ridge, while their heavy batteries, somewhat in the rear, shot straight along the tops of the ridges. But their valley forces were getting out of alignment a bit by now, owing to our heterodyne operations.

I ordered our swoopers, of which we had five, to sweep along above these ridges and destroy the Han batteries.

Up in the higher levels where they were located, the Hans had little cover. A few of their small

rep-ray ships rose to meet our swoopers, but were battered down. One swooper they brought to earth with a disintegrator ray beam, by creating a vacuum beneath it, but they did it no serious damage, for its fall was a light one. Subsequently it did tremendous damage, cleaning off an entire ridge.

Another swooper ran into a catastrophe that had one chance in a million of occurring. It hit a heavy Han rocket nose to nose. Inertron sheathing and all, it was blown into powder.

But the others accomplished their jobs excellently. Small, two-man ships, streaking straight at the Hans at between 600 and 700 miles an hour, they could not be hit except by sheer amazing luck, and they showered their tiny but powerful bombs everywhere as they went.

At the same instant I ordered the girls to cease sharp-shooting, and lay their barrages down in the valleys, with their long-guns set for maximum automatic advance, and to feed the reservoirs as fast as possible, while the bayonet-gunners leaped along close behind this barrage.

Then, with a Twentieth Century urge to see with my own eyes rather than through a view-plate, and to take part in the action, I turned command over to Wilma and leaped away, fifty feet a jump, up the valley, to-

ward the distant flashes and rolling thunder.

## CHAPTER XVI

### Victory

I HAD gone five miles, and had paused for a moment, half way up the slope of the valley to get my bearings, when a figure came hurtling through the air from behind, and landed lightly at my side. It was Wilma.

"I put Bill Hearn in command and followed, Tony. I won't let you go into that alone. If you die, I do, too. Now don't argue, dear. I'm determined."

So together we leaped northward again toward the battle. And after a bit we pulled up close behind the barrage.

Great, blinding flashes, like a continuous wall of gigantic fireworks, receded up the valley ahead of us, sweeping ahead of it a seething, tossing mass of debris that seemed composed of all nature, tons of earth, rocks and trees. Ever and anon vast sections of the mountain sides would loosen and slide into the valley.

And, leaping close behind this barrage, with a reckless skill and courage that amazed me, our bayonet gunners appeared in a continuous series of flashing pictures, outlined in midleap against the wall of fire.

I would not have believed it

possible for such a barrage to pass over any of the enemy and leave them unscathed. But it did. For the Hans, operating small disintegrator beams from local or field broadcasts, frantically bored deep, slanting holes in the earth as the fiery tides of explosions rolled up the valleys toward them, and into these probably half of their units were able to throw themselves and escape destruction.

But dazed and staggering they came forth again only to meet death from the terrible, ripping, slashing, cleaving weapons in the hands of our leaping bayonet gunners.

Thrust! Cut! Crunch! Slice Thrust! Up and down with vicious, tireless, flashing speed, swung the bayonets and ax-bladed butts of the American gunners as they leaped and dodged, ever forward, toward new opponents.

Weakly and ineffectually the red-coated Han soldiery thrust at them with spears, flailing with their short-swords and knives, or whipping about their ray pistols. The forest men were too powerful, too fast in their remorselessly efficient movement.

With a shout of unholy joy, I gripped a bayonet-gun from the hands of a gunner whose leg had been whisked out of existence beneath him by a pistol ray, and leaped forward into the fight,

launching myself at a red-coated officer who was just stepping out of a "worm hole."

Like a shriek of the Valkyrie, Wilma's battle cry rang in my ear as she, too, shot herself like a rocket at a red-coated figure.

I thrust with every ounce of my strength. The Han officer, grinning wickedly as he tried to raise the muzzle of his pistol, threw himself backward as my bayonet ripped the air under his noise. But his grin turned instantly to sickened surprise as the up-cleaving ax-blade on the butt of my weapon caught him in the groin, half bisecting him.

And from the corner of my eye I saw Wilma bury her bayonet in her opponent, screaming in ecstatic joy.

AND so, in a matter of seconds, we found ourselves in the front rank, thrusting, cutting, dodging, leaping along behind that blinding and deafening barrage in a veritable whirlwind of fury, until it seemed to me that we were exulting in a consciousness of excelling even that tide of destruction in our merciless efficiency.

At last we became aware, in but a vague sort of way at first, that no more red-coats were rising up out of the ground to go down again before our whirling, swinging weapons. Gradually we paused, looking about in wonder.

Then the barrage ceased, and the sudden absence of the deafening roll, and the wall of light, in themselves, deafened and blinded us.

I leaped weakly toward the spot where hazily I spied Wilma, now drooping and swaying on her feet, supported as she was by her jumping belt, and caught her in my arms, just as she was sinking gently to the ground.

All around us the weary warriors, crimsoned now with the blood of the enemy, were sinking to the ground in exhaustion. And as I too, sank down, clutching in my arms the unconscious form of my warrior wife, I began to hear, through my helmet phones, the exultant report of headquarters.

Our attack had swept straight through the enemy's sector, completely annihilating everything except a few hundred of his troops on either flank. And these, in panic and terror, had scattered wildly in flight. We had wiped out a force more than ten times our own number. The right flank of the American army was saved. And already the Colorado Union, from behind us, was leaping around in a great circling movement, closing in on the Han force that was advancing from the ruins of Lo-Tan.

Far away, to the southwest, the Southern Gangs, reinforced

in the end by the bulk of our left wing, had struck straight at the enveloping Han force shattering it like a thunderbolt, and at present were busily hunting down and destroying its scattered remnants.

But before the Colorado Union could complete the destruction of the central division of the enemy, the despairing Hans saved them the trouble. Company after company of them, knowing no escape was possible, lined up in the forest glades and valleys, while their officers swept them out of existence by the hundreds with their ray pistols, which they then turned on themselves.

And so the fall of Lo-Tan was accomplished. Somewhere in the seething activities of these few days, San Lan, the "Heaven Born: Emperor of the Hans in America, perished, for he was heard of never again, and the unified action of the Hans vanished with him, though it was several years before one by one their remaining cities were destroyed and their populations hunted down, thus completing the reclamation of America and inaugurating the most glorious and noble era of scientific civilization in the history of the American race.

AS I look back on those emotional and violent years from my present vantage point of de-

clining existence in an age of peace and good will toward all mankind, they do seem savage and repellent.

Then there flashes into my memory the picture of Wilma (now long since gone to her rest) as, screaming in an utter abandon of merciless fury, she threw herself recklessly, exultantly into the thick of that wild, relentless slaughter; and my mind can find nothing savage nor repellent about her.

If I, product of the relatively peaceful Twentieth Century, was so completely carried away by the fury of that war, intensified by centuries of unspeakable cruelty on the part of the yellow men who were mentally gods and morally beasts, shall I be shocked at the "bloodthirstiness" of a mate who was, after all, but a normal girl of that day, and who, girl as she was, never for a moment faltered in the high courage with which she threw herself into that combat, responding to the passionate urge for freedom in her blood that not five centuries of inhuman persecution could subdue?

Had the Hans been raging tigers, or slimy, loathesome reptiles, would we have spared them? And when in their centuries of degradation they had destroyed the souls within themselves, were they in any way superior to tigers or snakes? To

have extended mercy would have been suicide.

In the years that followed, Wilma and I travelled nearly every nation on the earth which had succeeded in throwing off the Han domination, spurred on by our success in America, and I never knew her to show to the men or women of any race anything but the utmost of sympathetic courtesy and consideration, whether they were the noble brown-skinned Caucasians of India, the sturdy Balkanites of Southern Europe, or the simple, spiritual Blacks of Africa, today one of the leading races of the world, although in the Twentieth Century we regarded them as inferior. This charity and gentleness of hers did not fail even in our contacts with the non-Han Mongolians of Japan and the coast provinces of China.

But that monstrosity among the races of men which originated as a hybrid somewhere in the dark fastnesses of interior Asia, and spread itself like an inhuman yellow blight over the face of the globe—for that race, like all of us, she felt nothing but horror and the irresistible urge to extermination.

LATTERLY, our historians and anthropologists find much support for the theory that the Hans sprang from a genus of human-like creatures that may

have arrived on this earth with a small planet (or large meteor) which is known to have crashed in interior Asia late in the Twentieth Century, causing certain permanent changes in the earth's orbit and climate.

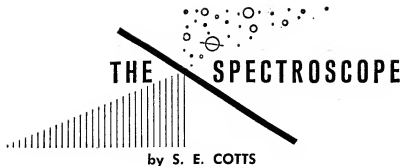
Geological convulsions blocked this section off from the rest of the world for many years. And it is a historical fact that Chinese scientists, driving their explorations into it at a somewhat later period, met the first wave of the on-coming Hans.

The theory is that these creatures (and certain queer skeletons have been found in the "Asiatic Bowl") with a mental superdevelopment, but a vacuum in place of that intangible something we call a soul, mated forcibly with the Tibetans, thereby strengthening their physical structure to almost the human normal, adapting themselves to earthly speech and habits, and in some strange manner intensifying even further their mental powers.

Or, to put it the other way around. These Tibetans, through the injection of this unearthly blood, deteriorated slightly physically, lost the "soul" parts of their nature entirely, and developed abnormally efficient intellects.

However, through the centuries that followed, as the Hans

*(Continued on page 142)*



# THE SPECTROSCOPE

by S. E. COTTS

**The Long Afternoon of Earth.**  
*By Brian Aldiss. 192 pp. Signet<sup>®</sup> Books. Paper: 50¢.*

This is a difficult book to review. It has a superb first section. From then on there is a gradual decline straight through to a disappointing and rather abrupt end. By decline, however, I do not mean that the writing ever becomes really poor or awkward—merely that it becomes more and more commonplace until it ends up being the level of the average science adventure story. Had the whole book been on the adequate, but uninspired level of the last parts, I would be less inclined to criticize and would have accepted it as simply another passable entertainment, though not a memorable one. But by writing such a complete and convincing beginning, Mr. Aldiss has spoiled the reader and let him down tremendously. If he hadn't allowed this glimpse of "Paradise," we would more easily accept the worm's eye view.

Therefore, the author is guilty of a lack of judgment which it would not be possible to accuse him of if he had never raised us up at all. In this respect, poor Mr. Aldiss is the victim of his own virtues.

In the first section, however, the author has the kind of writing that I so praised in his short story, "Old Hundredth," which I mentioned here a few months back. Taking a completely strange situation, his words are so original and yet, upon reflection, so indigenous to the characters, that it seems a description from life rather than a figment of imagination. His names of people and objects, and his invention of mores for them ring so true that there is no moment at the beginning where we have consciously to suspend disbelief to submerge ourselves in the story. The words immediately conjure up pictures and a frame of reference. So you can see what a jolt it must be for the reader to



find this kind of witchery on one page, and just plain storytelling on the next.

The book is a biologically-oriented one. The long afternoon of the title refers to the fact that the sun now always shines on the same side of the Earth. Thus there is a zone of perpetual light, one of perpetual darkness, and a thin band of perpetual twilight in between. The first and best part of the novel takes place on the bright side, where the constant sun has raised the vegetable to dominance at the expense of the animal. Generation after generation, all the remaining creatures become more and more mindless in this long de-evolution. In this extensive greenhouse we meet a small band of humans. And here is one of the faults of the book. For this group ultimately splits into three parts. Mr. Aldiss spends most of his space with one and the remaining space with another, but the third he never re-introduces at all. Yet, he has given enough about this "missing" group in the beginning to arouse an interest that's never satisfied. The group he chooses to spend the most time with goes through numerous trials and tribulations, including a trip to the dark side which is much less interesting and original than the action in the sunny portion. Also, they meet up with an intelligent para-

site fungus which attaches itself to one of the humans and controls him in a manner much too reminiscent of Robert Heinlein's famous novel, *The Puppet Masters*. Perhaps the reason why the fascination drops after a time is not so much that the creatures they meet are inherently less interesting, but because the humans themselves are not as interesting as their way of life. While we are getting acquainted with this, we don't notice their essential normalcy because their setting is so new and exotic. But once we accompany them on their journey, we are much more dependent on their reactions to things than before. Finally, as I noted earlier, the end is very inconclusive, with two of the three beginning groups meeting again briefly, then each going its own way.

**Prologue to Analog.** Edited by John W. Campbell. 308 pp. Doubleday & Company, Inc. \$3.95.

In this volume, John Campbell has collected stories to represent the period between 1950 and 1960, the last years of ASTOUNDING, and therefore his *Prologue to Analog*. In his introduction, editor Campbell goes into his reasons for changing the title of his magazine. They're interesting, but in the last analysis, irrelevant. The most important fact of any publication is the

quality of its material not the label under which it goes. And, frankly, I would feel very sad if AMAZING decided to get rid of its name, even if the new one were more descriptive of present day contents.

Right now, however, having finished *Prologue to Analog*, I hope Mr. Campbell's new name will provide a fresh stimulus, because these stories from ASTOUNDING are anything but top drawer. It wouldn't be so disappointing if this were an annual, but for an anthology from a ten-year period it leaves much to be desired. I think Mr. Campbell has done himself an injustice. I know ASTOUNDING has had stories superior to these, because I have seen them reprinted in general anthologies. Also, I appreciate not being subjected to an endless reprinting of these same ones. So, being as fair as possible, I'm going to give Mr. Campbell the benefit of the doubt by trying to convince myself that my lack of excitement at the stories included here is due less to lack of inspiration than to the fact that my taste and Mr. Campbell's are *Galaxies* apart (or maybe I should say *Amazing-ly* different).

There are ten stories in the book. One is an amusing selection by Asimov, but it's certainly not vintage material. Then, there is a competent contribution by

Eric Frank Russell that could have been a lot better if it hadn't crossed, at the end, that invisible line which divides the moving from the sentimental. "A Filbert Is a Nut," by Rick Raphael, presents an intriguing situation, but with no real explanations. Only a mood setter of the caliber of a Bradbury or a Sturgeon can really get away with this kind of half story. The most consistently successful effort here is "Pandora's Planet," by Christopher Anvil. It is an hilarious treatment of the problems facing a conqueror. Its only fault is that it goes on for too long. Even the best humor gets strained when used to excess.

And so it goes. There are lots of good touches in this anthology, but no real knockouts. And it takes a knockout to linger in the mind after the last page is read.

**The Stainless Steel Rat.** By Harry Harrison. 158 pp. Pyramid Books. Paper: 40¢.

Don't be misled by the title—it doesn't refer to a Mickey Spillane—type character. For the "Rat," alias Slippery Jim DiGriz is not a low-down gangster but a gentlemanly criminal. He has hardly a spot of meanness in him. What he thirsts for is adventure, a chance to outwit the system, but no killing allowed; it would spoil his record. Master of  
(Continued on page 141)

Dear Miss Goldsmith:

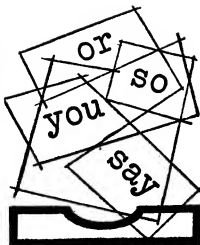
I have enjoyed AMAZING STORIES for a number of years now, and certainly feel that the magazine has grown and improved at least as much as any in the field.

I have been particularly impressed with Mr. Moskowitz' series, "SF Profile". An insight of the author's motives, ambitions, and accomplishments adds considerably to the enjoyment of a story.

Your classic reprint series is also fine, in that the younger fans (myself included) are given an opportunity to read the stories which contributed to the early growth of the field without having to fight the battle of the Used Book Shop.

One small adverse comment—it was an unpleasant surprise to read the first installment of "Pawn of the Black Fleet" one week, and receive the novel from the SF Book Club the next. A little coordination of activities might be called for. I did think it was a passably good novel, though a little sloppy on the dialogue.

And finally: thank God we have no Wyoming sheepherders involved in our Man in Space Program. Quite possibly Mr. Sutton (letter to the Editor, February 1962 Issue) should have asked the sheep. They might have used sounder reasoning.



Facts: The periods of revolution and rotation of earth's moon are both 27 days, 7 hours, and 43+ seconds. The interval from new moon to new moon is 29 days, 12 hours, and 44+ seconds. The difference being due to the simultaneous travel of the earth in its orbit. This figure is necessarily that of a moon "day".

Charles L. Stanford, Lt., USAF  
3221 Ridgeway Avenue  
Madison, Wisconsin

● *The book club incident was an unfortunate error. We require book publishers to hold their book until after the magazine is off-sale; and, more important, we ask that they indicate where it appeared as a magazine story and under what title. Publishers don't always do this.*

Dear Editor:

Your magazine is without a doubt the finest on the market. Among the many features that I especially enjoy are *The Spectroscope*, the prized columns of Frank Tinsley, and your classic reprints.

But now, enough of this praise, and to my main topic. Why doesn't that shepherd out in Wyoming (Feb-ish) stick to his sheep? Frank Tinsley was, as usual, correct, so where does this guy get off by saying that the moon day is 24+ hours long, and then trying to give a kindergarten proof of it?

Your comment was quite appropriate, but the letter should never have been published in the first place. Let's make sure, in the future, that our younger readers aren't fed wrong information about such a simple thing as the length of the lunar day.

I have sent Mr. Sutton a pencil to help him "figger with".

John J. Kurpen  
61 Glendale Ave.  
Hartford 6, Connecticut

● *Sharpened, we hope, so that he got your point.*

Dear Editor:

Instructions to Wyoming shepherd, Edward R. Sutton, for schematically visualizing rotation of moon.

Required research facilities: 1. One-foot square piece of scraped off flat ground. 2. One round stick, blazed on one side: suggestion for blazing if knife not available: rub stick against rock. (If rock not available, use teeth.) 3. Light enough to see by. 4. My instructions.

Instructions: 1. With point of stick, draw circle on ground to indicate earth. 2. Draw second, larger, circle around earth to indicate moon's orbit path around earth. 3. Draw small moon circle on orbit line, bisecting moon with orbit line. 4. Draw fourth circle for sun, in line with moon and earth. 5. Place blazed stick upright in center of moon with blaze facing sun. 6. Pretending that blaze represents unseen side of moon, move stick around earth on moon orbit line.

To be observed: 1. Stick must rotate once on its axis while making one orbit of earth in order that blaze remain unseen from earth. 2. Various phases of moon shadowing—assuming an earth-placed observer, an imagined line-of-sight variously relative to moon and sun, and a chosen time of day or night.

Helen M. Urban  
6520 Satsuma Ave.  
North Hollywood, Calif.

● *Had enough, Sutton? What's it worth for us to lay off?*

Dear Editor:

Thank you for a revived and improving AMAZING from a long time reader—Vol. 1 No. 1—to these many years.

There are three main items I wish to comment on:

1.) Your editorials—brief, to the point and original.

2.) Sf Profile—a fine and welcome feature, well done.

3.) Your recent serial, Mark Clifton's "Pawn of the Black Fleet," also in book form as "When They Come From Space"—in a quick scan job I compared the two versions out of curiosity as to what is involved in editing a long story like this. Surprisingly enough, in fact *amazingly*, your sharp deleting improved the story for me by removing some innocuous verbiage, some bitter banter, and some unnecessary disparagement of our Congress, Supreme Court and the Presidency.

D. A. Turner  
801 So. Giddings Ave.  
Visalia, Calif.

## THE SPECTROSCOPE

(Continued from page 138)

disguise and strategy, he can find no outlet for his cravings in the rich, organized and, to him, dull union of worlds in which he lives. To Slippery Jim, life is circumscribed, and only crime and a rejection of the rules offer him a semblance of freedom. But one day, he is outsmarted. And after he recovers from this blow to his ego, he learns that there is an organization to which his particular talents could be useful. When he joins it, he finds himself in the wildest adventure of his wild career, one which takes him chasing all over the galaxy after a beautiful lady of similar slippery character.

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---

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—GRANDALL BARRETTON

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## AIRLORDS OF HAN

(Continued from page 135)

spread over the face of the earth, this unearthly strain in them not only became more dilute, but lost its potency; and in the end, the poison of it submerged the power of it, and earth's mankind came again into possession of its inheritance.

How all this may be, I do not know. It is merely a hypothesis over which the learned men of today quarrel.

But I do know that there was something inhuman about these Hans. And I had many months of intimate contact with them, and with their Emporer in America. I can vouch for the fact that even in his most friendly and human moments, there was an inhumanity, or perhaps "un-humanity" about him that aroused in me that urge to kill.

But whether or not there was in these people blood from outside this planet, the fact remains that they have been exterminated, that a truly human civilization reigns once more—and that I am now a very tired old man, waiting with no regrets for the call which will take me to another existence.

There, it is my hope and my conviction that my courageous mate of those bloody days waits for me with loving arms.

THE END

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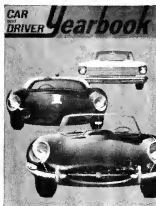
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